NOV 22 1946

Accounting Review

What Small Business Needs
MAURICE H. STANS

Electronics in Accounting
ADOLPH MATZ

Loose-Leaf and Accounting
HERBERT J. STOECKEL

Practical Sampling for Auditors
LEO HERBERT

Why Only Emergency Facilities?
WILLIAM Y. ARMSTRONG

Correspondence Courses in the Accounting Education Program
STEPHEN GILMAN

Guidance Tests for Accounting Students
A. C. LITTLETON

Correlation of Costs to Financial Statements
B. G. APPLEBY

Some Observations on Depreciation Allowances
PHILIP DONHAM

Cost and Output Relationships
HAROLD G. AVERY AND M. POLLACK

Costs and Volume in the Milk Pasteurizing Industry
MAX J. WASSERMAN

Analysis of Working Capital
GEORGE W. COLLINS

College Education as a Requirement for Public Accountants in New York State
RAYMOND G. ANKERS

College Education as a Requirement for Certified Public Accountants—The New York Experience
NORMAN E. WEBSTER

A GUIDE FOR ACCOUNTING PRACTITIONERS — STAFF MEN — STUDENTS

Professional Ethics of Public Accounting

By John L. Carey

PROFESSIONAL ETHICS OF PUBLIC ACCOUNTING, while directed primarily to young practitioners, staff men, and students, is particularly useful to established practitioners in accounting firms as a reference book, especially when specific questions arise concerning professional ethics. Without a proper understanding of the principles underlying the ethical rules, it is difficult to deal with problems involving the public interest, your clients, or relations with fellow accountants that continually come up in practice.

The value of this book is shown by a few extracts from the many letters received from prominent accountants, bankers, and business executives:

"I have recommended that our firm present a copy to every staff member, as I feel that the cardinal principles and rules will serve well both our clients and our organization."

"This excellent little publication is no doubt the most permanently valuable addition to our library in recent months. The entire text is so important that it should be carefully read by all. Past experience has amply demonstrated the vital importance of the subject to the neophite. Hence, in the forthcoming revision of the Staff Manual, this book will be included in the list of "must" reading. . . . There has been a need for a concise interpretation of the rules and conduct in compact and readable form and Mr. Carey's book amply fills this means."

". . . in fact, its judicious combination of common sense and intelligent professional self-interest has provided us with our best and most interesting text on a subject of great and growing importance. . . . I am certain that Professional Ethics of Public Accounting will be welcomed by all engaged in public practice, and that it will greatly benefit all its readers."

"The arrangement and commentary matter are such that it will be invaluable, particularly to young practitoiners, and if widely read should have an important influence in strengthening the observance of our professional code."

". . . . it outlines so clearly and comprehensively the obligations of the accountant to his profession, his clients and his consumers, and answers, incidentally, many questions that have been asked me from time to time by different associates."

"I know that I am going to find many occasions on which I shall want to quote your views and statements where problems of professional ethics and independence are involved."

KEEP A COPY WITHIN REACH AT ALL TIMES—ORDER TODAY

$2.00 a copy, post paid

(Plus 2% Sales Tax if delivered in Greater New York)

AMERICAN INSTITUTE OF ACCOUNTANTS

13 East 41st Street, New York 17, N.Y.

the Accounting Review

Vol. XXI OCTOBER, 1946 No. 4

What Small Business Needs.....MAURICE H. STANS 361
Electronics in Accounting.....ADOLPH MATZ 371
Loose-Leaf and Accounting.....HERBERT J. STOECKEL 380
Practical Sampling for Auditors.....LEO HERBERT 386
Why Only Emergency Facilities?.....WILLIAM Y. ARMSTRONG 390
Correspondence Courses in the Accounting Education Program...STEPHEN GILMAN 396
Guidance Tests for Accounting Students.....A. C. LITTLETON 404
Correlation of Costs to Financial Statements.....B. G. APPLEBY 410
Some Observations on Depreciation Allowances.....PHILIP DONHAM 415
Cost and Output Relationships.....HAROLD G. AVERY AND M. POLLACK 419
Costs and Volume in the Milk Pasteurizing Industry.....MAX J. WASSERMAN 425
Analysis of Working Capital.....GEORGE W. COLLINS 430
College Education as a Requirement for Public Accountants in New York State.....RAYMOND G. ANKERS 441
College Education as a Requirement for Certified Public Accountants—the New York Experience.....NORMAN E. WEBSTER 445

DEPARTMENTS

Accounting Exchange.....A. C. LITTLETON 451
Professional Examinations.....HENRY T. CHAMBERLAIN 464
Book Reviews.....HERBERT E. MILLER 471
University Faculties in Accounting..... 477

Editorial Board: A. C. Littleton (ch.), Stephen Gilman, C. Rufus Rorem. *Editorial Staff:* Associate editors, George D. Bailey, L. J. Buchan, Perry Mason, C. Aubrey Smith, Ross G. Walker; department editors, H. T. Chamberlain, Loyola Univ. (Examinations), A. C. Littleton, Univ. of Illinois (Exchange), Herbert E. Miller, Univ. of Michigan (Book Reviews)

Publication office: A. C. Littleton, Kinley Hall, Urbana, Ill.
Subscription and Advertising: E. C. Davies, School of Commerce, Northwestern University, Evanston, Ill.
Published quarterly in January, April, July, and October.
Subscription price: $4 a year; $1 a single copy; postage free. Entered as second class matter at the Post Office at Menasha, Wis. Accepted for mailing at the special rate of postage provided for in the Act of February 28, 1925, authorized February 12, 1932.
Copyright 1946, American Accounting Association.

CONTRIBUTORS TO THE OCTOBER NUMBER

MAURICE H. STANS (*What Small Business Needs*) is a partner in Alexander Grant & Company in Chicago.

ADOLPH MATZ (*Electronics in Accounting*) is a member of the accounting faculty of the University of Pennsylvania at Philadelphia.

HERBERT J. STOECKEL (*Loose-Leaf and Accounting*) formerly was director of research for *Bookbinding and Book Production*, the trade journal of the book manufacturing industry.

LEO HERBERT (*Practical Sampling for Auditors*) is a member of the accounting faculty of Louisiana State University at Baton Rouge.

WILLIAM Y. ARMSTRONG (*Why Only Emergency Facilities?*) is district manager for the American Appraisal Company in Cleveland.

STEPHEN GILMAN (*Correspondence Courses in the Accounting Education Program*) is educational director of International Accountants Society, Inc., in Chicago.

A. C. LITTLETON (*Guidance Tests for Accounting Students*) is a member of the accounting faculty at the University of Illinois in Urbana.

B. G. APPLEBY (*Correlation of Costs to Financial Statements*) is assistant manager in the New York office of Ernst and Ernst.

PHILIP DONHAM (*Some Observations on Depreciation Allowances*) recently was vice president of Electro Refractories & Alloys Corporation in Buffalo.

HAROLD G. AVERY (*Cost and Output Relationships*) is a member of the faculty in business administration and economics at Bradley Polytechnic Institute, Peoria.

M. POLLACK (*Cost and Output Relationships*) is medical director and superintendent of the Peoria Municipal Tuberculosis Sanitarium.

MAX J. WASSERMAN (*Costs and Volume in the Milk Pasteurizing Industry*) is on the staff of the United States Department of Commerce, in the office of International Trade Operations.

GEORGE W. COLLINS (*Analysis of Working Capital*) is a member of the accounting faculty of Northwestern University in Chicago.

RAYMOND G. ANKERS (*College Education as a Requirement for Public Accountants in New York State*) is personnel manager for Lybrand, Ross Bros. and Montgomery in New York.

NORMAN E. WEBSTER (*College Education as a Requirement for Certified Public Accountants—the New York Experience*) is a member of the firm of Webster, Horne & Elsdon in New York.

The Accounting Review

VOL. XXI OCTOBER, 1946 No. 4

WHAT SMALL BUSINESS NEEDS

MAURICE H. STANS

"Small business is the foundation of American enterprise and the backbone of American prosperity." James F. Byrnes, War Mobilization Director, 1944

IN THE broad subject of "small business" today are bound together the many diverse threads of a current problem which is visualized as containing far-reaching implications, not alone economic but also social and political. Big business is seen as growing ever bigger, more concentrated, and more firmly entrenched, with small business at an ever-increasing disadvantage. The war is blamed for much of the condition, because the productive power and the "know-how" in the hands of the larger companies gave them, during that period, an opportunity for tremendous growth and expansion in facilities and permitted them to add materially to their resources.

In contrast, it has been estimated that the number of small business enterprises in the country decreased 15 per cent during the war, in a net reduction of more than five hundred thousand ventures. Of those which remained and were successful, many were gobbled up by larger companies in programs of vertical or horizontal expansion, a process which is still going on at a fast rate. With the ranks of small business thus depleted by the loss of all of its unsuccessful and many of its most successful units, and with the economic powers of big businesses so highly concentrated that ex-Congressman Maverick estimates that 62 per cent of the productive capacity and economic strength of the nation is now in their hands, a great deal of concern is expressed for the future of the small enterprises that remain or the new ones that are launched from time to time.

The problem of small business is so complex that little agreement and practically no progress has been reached as to its solution. Certain government spokesmen believe that an answer can be found only in government intervention of some sort, a course highly disputed by many bankers, businessmen, and others. Strangely, small business itself seems least interested in the whole subject, or in any event has thus far failed to take any strong collective position or to make any forceful effort to organize in its own cause.

The breadth of the economic, social, and political implications, the diversity of viewpoints so far expressed, and the relationship of the subject to the general current concern about the future of our own national system in a confused and uncertain world combine to make this problem a timely one and suggest the questions which determine the scope of the analysis here attempted. What is the significance of all this current discussion? What is "small business" and what are its difficulties? What are the principal aspects of

"the problem of small business" and why is it so difficult to reach agreement as to the best course to pursue? And, finally, what are the possible solutions, if action is agreed to be desirable?

GENERAL PREMISES

It is probably unnecessary to dwell at length on the various statistics that are frequently quoted as evidence of the present predicament of small business. For the purpose of shortening the approach to the analysis of its problems and possible solutions, the following premises are adopted:

(a) Despite the absence of any formal classification, it is nevertheless easily apparent that small business units compose over 90 per cent in number of the industrial and commercial establishments of the country.

(b) Nevertheless, so-called big business is acquiring a dominating position in our economic structure, as evidenced by the fact that it now employs 55 per cent of the labor force[1] and accounts for an even greater proportion of production and finance.

(c) Even though small business may, in the early postwar years, recover some of its losses in numbers (as is expected), long-term statistics will demonstrate that big business is definitely in the ascendance and small business on a decline which is accelerating in momentum.

(d) Despite an admittedly higher cost on the average necessary to support a strong national community of small business, retention of the present balance of power between big business and small business is socially and politically desirable.

Agreement on the last point is especially vital, or there is no problem to be solved. If efficiency were the sole criterion, then the ultimate concentration of all economic activities of production and distribution in a small number of efficient, monopolistic, super-enterprises could well turn out to be the logical ultimate of the industrial revolution which began in the eighteenth century. But this economic possibility raises all the social and political issues of competitive enterprise versus planned economy, of individual initiative versus economic slavery, of the profit system versus government control or ownership, and of democracy versus statism. Adherents of the democratic process believe that a suitable proportion of economic power in the hands of "small business" owners is the only means of retaining for the masses an adequate force for expression and of preventing the people from becoming slaves to an industrial or political system.[2] They contend that even big business should recognize the validity in this contention, on the ground that a solid echelon of small business enterprises would be the principal deterrent to the inevitable increased regulation, or possible government acquisition, that would follow further concentration of business wealth and power in fewer and fewer hands.

PROBLEMS OF SMALL BUSINESS

Granting for the purpose of further analysis that small business is important to our way of life, and that it is now on a long-time downtrend which is likely to continue, it next becomes important to inquire further into the circumstances which seem to burden its relative chances for survival as an economic factor. The principal items which have been advanced as disadvantages of small business are these:

(1) It lacks access to adequate initial capital and long-term financing.

(2) It cannot cope with the involvements of governmental red tape and regulation.

(3) It lacks adequate managerial, scientific, and technical skills to provide the "know-how" of production and distribution.

(4) It is burdened with the high unit costs usually attendant upon small-scale operation, especially in manufacturing.

[1] Estimate of Henry Wallace in 1945.

[2] Such a development has been visualized in various degrees of apprehension in the "managerial revolution" envisioned by James Burnham (*The Managerial Revolution*, 1941) and the political and social revolution predicted by Friedrich A. Hayek (*The Road to Serfdom*, 1944).

(5) It cannot afford the cost of extensive research and development activities, or of promotion, or of professional technical counsel.

(6) In times of scarcity, it is the victim of discrimination in the procuring of materials and supplies; in times of plenty, it is the victim of unfair competitive practices; and in all times, it is the victim of quantitative distinctions.

(7) It is prevented by the tax laws from building up adequate financial reserves to provide growth and to meet times of stress.

Capital is, of course, essential in some degree to almost any business. In a merchandising venture funds must be available for the purchase of inventories and to finance sales during the period between shipment and collection. In a manufacturing venture money is needed for machinery, equipment, tools, dies, and frequently for experimentation and development. In either case, additional amounts may be available to finance losses during the early period in which the business is becoming established. Small business does not have access to the public markets for money and cannot undertake public financing. Banks ordinarily are unwilling to provide venture capital or more than a small portion of the amount to be invested in plant. Initial capital and long-term financing therefore usually must originate from the meager pockets of the venturer, or from silent partners or others who have substantial confidence in his ability and the merit of his idea. Some nucleus of such venture capital is almost always necessary for the securing of additional working capital from banks or finance companies.

The condition of governmental red tape, regulation, and annoyance is a troublesome one for small business. The author can suggest no better characterization of the entire range of accounting and legal involvements of government control and compliance than that which he expressed in a previous article considering this topic:

> The small business is invariably started and frequently developed on the principle that the transaction is the thing and the record-keeping is incidental. The new entrepreneur, embarking in his modest way in an untried venture, must depend upon a maximum of sales and a minimum of detail to reach a plane on which he can compete with those well established and grown. The struggle of "small business" to survive against "big business" is largely a contest of overhead ratios. Anything which weighs disproportionately on the small business in this balance challenges its existence. . . .
>
> Most of (the accounting problems, government controls and reports, and tax obscurities) were conceived in a maze of legislative or bureaucratic verbiage that defies the unskilled to divine their scope or their application. Their impact is heaviest upon the small business, to which regimentation and regulation are new experiences. Learning about the obligations and responsibilities under new and changing enactments frequently occupies a large part of the available executive time in the small enterprise. Supervising their fulfillment may well demand the rest. . . . In the small business, the tail is now wagging the dog.
>
> It is typical of American legislative bodies to attempt by minute definitions, narrow applications, and frequent "exceptions" to temper their exactions with justice. This search for ultimate refinement in legislation, in the desire to avert inequities, leads to exhaustively lengthy enactments couched in heavy legalistic language. These laws are then supplemented by extensive interpretive regulations that presume to outline all the phases of application. Finally, the enforcement bureaus and agencies have their promulgated instructions and rules that, seeking to be definite, merely penetrate further into an infinity of variations. It is patently impossible for the "small business" man—the lumber dealer in Peoria, the bakery owner in La Crosse, the laundry operator in Pontiac, or the coal merchant in Plattsburgh—to comprehend these fine distinctions.[3]

Here a solution will be difficult. The government of a complex industrial nation must impose controls, limitations, and restrictions on its subjects. As such controls become law under the democratic process, they must of course be expressed in legal terms. Effective and fair legislation can only be based on suitable factual data, which in turn requires governmental agen-

[3] "Accounting Problems of the Small Business," *Journal of Accountancy*, September, 1943.

cies to accumulate such information as to the state of the nation. This means inquiry, questionnaires, and research, which must depend upon the cooperation of all business. The growth of the government's social responsibility will, in time, tend to increase rather than decrease this burden.

The deficiencies of managerial and technical skills in small business perhaps far outweigh the other difficulties mentioned. In fact, here is probably the real essence of the problem of small business. If it were possible to secure a properly weighted list of the reasons for the demise of the last one million small businesses which failed (which, of course, is impossible), it would very likely be found that, of those judged to be feasible in conception, personal ineptitude was the cause of failure in practically all.

There are many ways in which this occurs. The mechanical wizard who can develop an ingenious invention may lack the ability to adapt it to production, or the personal characteristics to get the best out of labor, or the technical knowledge to lay out operations to produce efficiently, or the ability to sell, or the capacity to control finances. What is even more likely, he will frequently not recognize or concede his deficiencies in such fields. If he does, he may lack the ability to secure associates to handle these functions for him to the extent necessary to complete a balanced organization. The ambitious youth with an urge to operate a store may lack some of the nice discretion required to deal with customers, or the ability to purchase properly, to display or to balance his stock, to control expenses, or to maintain good housekeeping. Any one of these can be the cause of failure. This is inherent in the competitive system, which recognizes that it is not necessarily the man who makes the best mousetrap or sells the most mousetraps but the one who makes the best profit on mousetraps that is measured as successful.

Next comes the matter of high unit costs of production or service. Clearly the manufacturer making two hundred stoves a week cannot afford the laborsaving devices and efficient facilities of a large competitor. The suburban corner drug store will have a relatively higher cost of doing business than the high-volume city store. The small maker of a broad line of pumps cannot produce them as cheaply as the mass producer. Even assuming adequate supervisory ability, it is unquestioned that the absence of laborsaving devices, the making of small-quantity runs, the inability to procure comparable engineering talent or to maintain improvement of methods and products, and other similar factors affecting cost frequently combine to eliminate a small producer from a competitive market.

The small business is usually not in a position to expend very much of its capital in research and development, in market studies, in intensive promotional selling, in time and motion study, in plant engineering and layout, and in the other fields of scientific and technical development. The average small businessman either disdains such activities as being the "highfalutin'" mysteries of big business or looks upon them enviously as something which he would like to have but cannot afford. This deficiency accounts for the fact that many new ventures based upon sound ideas and well launched are nevertheless unable to continue to hold their position for a sustained period of time. In one way or another, they lose out to the continual intensive research and improvement and the sustained promotional activities of their bigger competitors.

Discrimination is almost always one of the trials of small business. In times of scarcity of materials, the small business does not have the purchasing agents, the expediters, and the other representatives

to insure the securing of an adequate supply. This is accentuated by the fact that it is easier for suppliers to handle the orders of those who buy in greater quantities and it also seems better business for them to give this production to those with whom they have established connections than to deal with the small operators who buy in lesser quantities, whose credit risks may not be so good, and who may not be around a few years later. In times of plentiful supplies of merchandise, the small business is the victim of price wars, or devices such as the use of loss leaders, or other unfair competitive practices. At all times it is the victim of quantitative distinctions: it purchases in small quantities and pays more per unit; it borrows in small amounts and pays a higher rate of interest; it receives its goods in small lots and pays more freight; and so on.

Finally, the complaint is made that the small business, although it may be able for a period of time to surmount all these difficulties and make money, is not permitted, because of our tax structure, to build up adequate financial reserves for continuing growth and to meet times of emergency. During the war, the excess profits tax was the most vicious example and the relief promised in Section 722 of the Internal Revenue Code now seems illusory to the small business, which usually finds the cost of proving a claim to be prohibitive. Even now, income tax rates are high, a business operating under the corporate form is subject to double taxation, and any careful husbanding of profits for the future is threatened with a tax on "unreasonable accumulation of surplus."

It would not be difficult to reach the conclusion, after considering these and the many other classifications of the problems of small business, that they resolve themselves simply into insufficiencies of three elements—money, skill, and governmental sympathy. The subject is so broad, however, that it deserves more than an attempt to find a solution merely by proposing to ladle out these deficient elements in greater quantity, by package or by prescription. It is this fact that argues against those who believe that a panacea for all the ills of small business can be found merely by creating a few more government instrumentalities to dispense loans and literature.

WHAT CAN BE DONE?

Having thus outlined the significance of this general problem, and having considered some of its aspects, we come now to the point of enumerating the principal directions in which some solution or amelioration might be found. Here is where most divergence of opinion appears. It has been suggested, on the one hand, that the situation is one for the national government to handle through special agencies qualified to extend both money and advice to those in need of it; and, on the other hand, that this is a community problem to be solved solely by local initiative and cooperation. It has been proposed from one point of view that the salvation of small business depends upon giving it subsidies and other special benefits, and from another point of view that its difficulties will be solved if new laws are passed to restrain and limit big business. Certain national business associations have contended that the solution can be found, not by special concessions to small business, but by legislation improving conditions for all business. From this diversity of reasoning there naturally has followed a great range of proposals and plans with varying degrees of logic and seeming feasibility.

The proposals of those who believe that it is the government's responsibility and within the government's power to solve the problem of small business usually con-

tain these major points:

> (1) Equity capital should be made available to small business, either by direct loans from a government agency or by bank loans guaranteed in whole or in part by the government.
>
> (2) The government should furnish technical assistance to small business as it does to agriculture.

There is not much to be said in favor of direct loans from government agencies. Such loans would of course not diminish the risks involved but would merely transfer losses to the taxpayers. A system of such loans might be subject to political pressures and might lead to intervention by government in the management of business. The banks and finance companies are better equipped to screen applicants and judge the merits of their plans, and they can act faster.

There may be some merit in the idea of partial guarantees by the government of loans made by banks, under a plan fashioned after the National Housing Act, provided the procedure were simple and quick. Nevertheless, it is likely that the banks and finance companies can do their part of the job adequately and well if the government will merely create an atmosphere which stimulates venture capital. Given a free climate and suitable opportunity for profit, the enterpriser with a reasonably speculative idea will not find it difficult to interest a supporter. If the prospects are good, the money will be found somewhere. New ventures are being formed by the hundreds daily in just that way.

Elaboration of the idea that the government should furnish technical assistance has led to the suggestion of local agents for small business, placed in every community in the country, similar to the "county agent" scheme of disseminating information and advice to farmers. This proposal has been seriously challenged, on the sensible premise that the two cases are in no way comparable. The farm county agent may himself be a farmer and thereby add to rather than detract from his ability to advise others on practical matters. The scope of all the business activities to be found in a typical community is so great as to require that a business advisor make a full-time project of his work. Yet any person capable of giving sound and successful advice to a wide range of enterprises would surely come to the decision, somewhere along the line, that his own interests could be served much more remuneratively if he were to find a business for himself than continue to work for a mail clerk's salary.

There are other reasons for opposition to the idea of looking to the government to "mother" the small enterprises of the country. It has already been pointed out that many ventures are doomed to failure at the start because of fallacious conception or of incompetent management. Would the government representative attempt to remedy these difficulties, or merely to judge their force as factors in potential success? In other words, would it be the government agent's job to try to make every venture succeed, or to pick those which he believes worthy of aid? Would it be his assignment to develop for his area a static business community of successful ventures, without any turnover of failures, or to encourage the trial and error which is typical of the restlessness and ambition of the American spirit? Would his job be merely to answer questions or to volunteer help? If consulted on a question involving diversity of interest between the government and the businessman, which would he favor?

One of the most critical commentaries on the proposal for government assistance appeared in a recent article written by a small manufacturer:

> Speaking as one of the small manufacturers, I must say that we are sick and tired of Federal "as-

sistance." We won our share of the war despite the bureaucrats, and we will fight as hard for the peace, but industry needs a free hand, not still more helping hands. We do not want premium payments for increased production, guaranteed markets, government absorption of undue risks, priorities for equipment, and allocation of materials. Difficult as it may be for expediters to believe this, their plans invariably waste the small manufacturer's precious time. The large corporations may have the clerical staff and legal counsel necessary to fill out questionnaires in quadruplicate, but the manager of a small plant is too busy in the shops to spend long hours on front-office paper work.

The small manufacturers had their fill, during the war, of Federal plans to relieve emergency situations. A Smaller War Plants Corporation was set up to render us emergency financial aid. To borrow fifty thousand dollars, it took five thousand dollars' worth of legal aid, clerical work, time, long-distance calls, and trips to Washington. And then it was five or six months before the money was actually received.

The small manufacturers, whose production is most needed, would rather take their chances on the open market, where speed and ingenuity pay off, than engage in paper warfare with better-equipped opponents. When we need spare parts, we need them at once and not at the end of a five-week exchange of correspondence with Washington. We have better luck with junk yards than with priorities.[4]

Here is an example of the spirit of small business and a positive retort to those who want more bureaucracy at work.

SPECIAL PREMISES

Before outlining any alternative proposal for meeting the "problem of small business," there remain certain basic considerations to be recognized. First, no plan for small business can hope to repeal the natural law of "survival of the fittest," nor should it. The high mortality rate among new business ventures is well known,[5] and it cannot be materially improved, nor need it be to accomplish the desired aim of a balance with big business. No economic or political system can be devised to make every harebrained scheme into a successful and profitable business, or to develop into business tycoons all the inept, lazy, and visionary individuals capable of a brainstorm. The dreamers of perpetual motion machines, the concocters of home liniments, and the searchers for buried treasure will always be with us but should not be encompassed in our desires to preserve our economic system. We cannot aim to support a bunch of small economic cripples. The objective can be merely the helping of those enterprises which deserve to be part of such a system through their capacity to render a needed service.

Second, not all the weight in the economic scale is in favor of big business. Bigness has its disadvantages, too, of which one is the law of diminishing returns. Small business can make certain products and perform certain services which a big business cannot render competitively. The field of specialization is usually open to the small business; it can produce the small-quantity orders, the tailor-made jobs, which its more cumbersome large competitors cannot undertake. The suburban store, despite its higher costs and prices, can represent a convenience which its customers are willing to support. And so on. The natural areas of opportunity for small business are, by these conditions, still important.

Furthermore, it is not to be assumed that very much voluntary help will be secured from the general public in solving the problem. No matter how well he may recognize the long-term advantages in the preservation of small business, the individual consumer will not directly share any part of the cost of preserving it. He cannot be expected to pay an independent manufacturer or storekeeper one cent more for a

[4] "Small Business Fights for Life" by Robert E. Outman, *Atlantic Monthly*, April, 1946.

[5] Roy Foulke of Dun & Bradstreet has estimated that about 10 per cent of all business is discontinued each year, 5.4 per cent changes hands completely, and 2.3 per cent reorganizes without changing ownership.

specific purchase merely because he is sympathetic. Individually, the consumer will still look for the best bargains.

Finally, it is not to be expected that any plan can be devised which will take each of these listed difficulties of small business and bring it into an exact balance with big business. For example, it would be foolish to attempt to make interest rates the same for everyone. It would be equally ridiculous to ask big business to "featherbed" its plant payrolls in order to make its production costs equal to those of its smaller competitors. Only a Petrillo would suggest that. It seems more logical to conclude that the approach must be one which recognizes certain of the disadvantages of smallness as inevitable and attempts to compensate for them in other ways.

PLAN FOR SMALL BUSINESS

When it is desired to balance the sides of an unbalanced scale, the procedure can be either to add to the one or subtract from the other. In our present problems, this would mean either imposing new restraints and restrictions upon big business, or granting special considerations to small business, or a combination of the two. Assuming again that such a balance is desirable in order to maintain approximately the present division of economic power between big business and small business, and on the premises herein stated, these needs become apparent:

(1) After having defined small business, the government should undertake to improve its economic climate by granting it more freedom of action and relief from controls and regimentation.

(2) As an extension of that objective, the government should provide tax concessions for small business aimed not only at improving its chances for survival but also at creating an atmosphere which will entice venture capital.

(3) Without destroying existing investments or the right of orderly growth, the government should impose certain reasonable restraints on further encroachment and unfair practices by big business.

(4) To relieve small business of the "red-tape" problems of accounting, taxation, and necessary government requirements and to counsel and advise its management in planning and operation, the present business professions should expand their scope of service to act as consultants to small enterprises at reasonable cost.

Any plan must start with some definition of small business as a means of classifying those which it is intended to help. Any such definition must be arbitrary, as is the legal fiction that a boy becomes a man on his twenty-first birthday. It might be based upon the volume of business done, the amount of investment, the number of employees, or a combination of them. It might take into account, as suggested by some economists,[6] the number of stockholders and the public interest which is involved when securities are widely distributed, thus distinguishing between public companies and private companies. This definition would be no more difficult than that of defining what constitutes an investment company, or a personal holding company, or similar concepts now in the statutes. Such a classification, however devised, would serve the dual purpose of standardizing the group which is to be favored in legislation and making it possible for growing enterprises to decide the classification to which they wish to attach themselves. Even the latter is not a new thought, because in the very nature of successful enterprise there frequently is posed to the owners or managers the question of whether it is best to expand or not to expand, whether to reach out or to consolidate a position.

Having determined upon such a definition, the government should first undertake to improve the stimulus to small business by granting it a more favorable atmosphere and by relieving it from as

[6] "*The Modern Corporation and Private Property*" by Berle and Means (The Macmillan Company, 1935).

much as possible of present controls and regimentation. This involves a comprehensive study but it is easy to name examples. The statutes enjoining or limiting competitive practices, such as the Robinson-Patman Act and the Clayton Act, should not be enforced against small business. When national shortages exist in any commodity, appropriate shares should be allocated to small business, something which can be done only after a classification such as that proposed has been made. Federal and state labor and wage laws should exempt small business from most of their burdensome restrictions and requirements. In short, small business should be free to buy, sell, hire and fire, grant credit concessions and discounts, and make profit in any legitimate way that it can. Every future enactment dealing with any phase of governmental regulation by legislation should take into account this policy.

In the field of tax relief for small business, it is easy to name some particulars:

(a) The right to carry over losses for a new business should be extended to a five- or ten-year period.

(b) The rate of depreciation of the original investment in plant equipment or other fixed assets should be entirely optional to the new small business for that same period. The same option should apply to all engineering, development, design, and patent expenses at all times.

(c) Tax enforcement should be freed of legal quiddities, such as the reasonableness of compensation; and relief provisions should be informally and liberally administered. For example, the handling of excess profits relief claims under Section 722 should take into account the inability of small business to accumulate formal proof according to the strict laws of evidence, and such claims should be quickly settled under a procedure similar to that of war contract renegotiation.

(d) The penalty of double taxation for the use of the corporate form should not apply to the small business, which should be taxed as though it were a partnership.

(e) Alternatively, the tax section restricting the accumulation of surplus should exempt small business.

(f) The competition from subsidized and tax-exempt organizations should be eliminated by making all business income subject to tax.

(g) The nuisance excise taxes (other than on liquor and tobacco) should be repealed so that the business man may be relieved of the complications of being a tax collector.

The third step in the plan suggests the imposition of reasonable restraints on big business to prevent further encroachment and unfair practices. It is assumed that the present antitrust statutes, fair-trade-practice statutes, and trust-busting activities of the government will continue as before. In addition, Congress should give consideration to provisions such as those in legislation now before it which would prevent unnecessary mergers, acquisitions of competitors, purchases of unassociated enterprises, and other abuses the effect of which is substantially to lessen competition, restrain commerce, or tend to create a monopoly. Furthermore, trade practices whereby producers control ultimate distribution to the disadvantage of small business should be stopped. The easiest illustration of this is the moving picture industry, which dictates and controls the selection and showing of films in the theatres. The field of past abuses in big business should be carefully studied so that new legislation is not unduly restrictive but is adopted with the aim of preserving the competitive system, eliminating the misuse of power, and thereby aiding small business to survive. Nothing should be done, however, to impair the valid present rights of legitimate big business, to prevent its growth, or to penalize its success. We are too deeply obligated to big business for what we have today.

The final suggestion deals with the admitted lack of managerial skill and technical ability in the average small business. It also deals with the conceded necessity of a certain amount of accounting and reporting in every business. It visualizes the

answer to both of these difficulties in the development of independent professional services of two types—that of consultant to small business and that of professional director. The consultant should be capable of taking from the shoulders of the "little fellow" all the confusion of dealing with the intricacies of accounting, taxation, reporting, and compliance with government-requirements. He should also be competent to advise and counsel on the multitudinous phases of business management, organization, and operation. He should be of help in fact-finding, in planning and forecasting, in checking results, and in distinguishing the important from the unimportant.

The consultant to small business need not know all the answers but should know where to find them and how to use them. He should not do all the work himself but should merely guide it. He should advise, as distinguished from executing. Regularity of consultation would be important. Only in that way can the cost be kept in line.

This service can be of inestimable value. For example, it has been observed by one writer that the inability of the small businessman to obtain financing is usually due to a failure to set his own house in order managementwise and from inability to marshal sound financial plans. Here is a simple job for the expert. In his relationship with small business the consultant should assume a position akin to that of the old-time family doctor. In that close relationship, he can aid management to sound decisions, can counsel on such diverse subjects as insurance, taxation, securing capital, planning finances, personnel selection, and delegation of responsibility. He can know where to find competent advice on processing, product design, advertising, and merchandising. In this way, he can remove some of the principal differential handicaps from which small business suffers. The consultant can be its guide and confidant, can help to remove the confusion of red tape, and can extend to many the benefit of research once done.

The consultant to small business can serve within the framework of one or more of the present professions. Of all these, the public accountant is by education, training, and experience best suited. All that is needed is an expansion of the present range of vision of the profession and recognition of the desirability of a more constructive service. Such an expansion can greatly extend the usefulness of the profession and its importance as a factor in our economic existence. The accountant's work can thus cover many clients and many communities not now being served. Up to the present, the demands from bigger business have kept pace with the growth of the profession so that the possibilities of its range of service have never been fully explored. Here is its new frontier!

The professional director would best serve the middle and upper levels of small business. Here, the old-fashioned family boards of directors who meet quarterly to declare dividends should give way to active boards of strong individuals. The presence of an engineer, or a banker, or an accountant, or a lawyer, on a board which meets regularly and really discusses the details of business operations can be of inestimable benefit. From this, there should develop the concept of professional directors, adequately paid, persons whose experience and business judgment qualifies them to be of real assistance in business planning. Once again, the ranks of public accountants may be the best source.

These four steps—relief from regimentation, favoritism in taxation, protection from unfair practices, and real aid from the professions—will go far toward keeping small business in balance with big business. Of course, there are many lesser things that would help, too. The government could ease the way for small business in export

trade by guaranteeing credits under a plan similar to that of Britain. Small business itself must awaken to its predicament and organize to present its case. And there are things the government could do to help all business, big and small. A rational clear-cut wage policy would help. The enforcement of responsibility on the part of labor would be a big step. Simplification of the tax structure is desirable and elimination of the fear of continued government regimentation and government competition would have a salutary effect.

Small business neither needs nor wants government handouts of money or advice. It does not want to be nursed. It asks only to be free—free of "red tape," free of unnecessary controls, free of unfair competition, free to plan its own course. If the government will grant this freedom, small business, with the help of the professions, can take care of itself. And big business should, for its own sake, see the merit of such a course because if it is true, as Jesse Jones said while Secretary of Commerce in 1943, that "the preservation of small business is essential to democracy in our country," then in the final analysis the "problem of small business" is the concern of all who believe in democracy and our present way of life.

ELECTRONICS IN ACCOUNTING*

ADOLPH MATZ

WHILE COST determination was the chief task of the accountant during the war years, and while the reconversion job was tackled and completed more quickly and more efficiently than many expected, the task of waging a successful battle in competitive enterprise is about to begin. Sales forces, production men, design and equipment engineers, personnel and public relations officers have been marshaled to the aid of management. But cost- and profit-minded executives cannot overlook the assistance of the accounting division. The comptroller and his staff compose an integral unit of business management. The preparation of monthly or annual statements has long been recognized as the quintessence of the accountant's task. Weekly payrolls, inventory records, billing methods, etc., fall within his realm. But the execution of these tasks cannot and should not retain his sole interest. Today as never before the industrial accountant faces the great and ever-challenging responsibility of providing top management with a prospective cost and profit picture that will enable executives to appraise future policies regarding prices, production, employment, and profits. Many premises and preconceptions must be taken into consideration by the industrial accountant. Again, it is not the mere preparation of such management aids that is important; more valuable still is their timeliness and the possibility of preparing them quickly and efficiently. Much criticism has been heaped upon the accountant in the past because of his delay and slowness in preparing daily, weekly, monthly, or annual reports or forecasts. But the fault does not always rest with

* The author wishes to express his gratitude to Mr. John H. Davis, Research Engineer, Institute of Advanced Study, Princeton, N. J., formerly with the Moore School of Electrical Engineering, University of Pennsylvania, for the technical assistance rendered in the preparation of this article.

the accountant. Often in spite of all manual and/or mechanical help, he is unable either to complete the job or even to present all the multiple possibilities that could be computed and should be presented by changing the premises. The solution of the problem of "normal capacity" has perplexed many executives and accountants. But the problem still remains and must be brought to management's attention in the light of its true influence upon the future picture of the company.

The execution and solution of the many tasks ascribed to the accounting division has been aided by machines, such as adding, computing, and calculating machines, bookkeeping and billing machines, punch card and other tabulating, analysis, and accounting machines. Most machines, together with other office equipment, have been purchased and installed in order to increase the efficiency of department and staff and also to reduce operating costs. The selection of the equipment has always been closely related to the designing of forms and records, and to improvements in routine and procedure. Yet the majority of these machines, whether hand-operated, electrically-driven computing machines or electro-mechanically-operated tabulating equipment, have been assigned to jobs such as preparation of payrolls, printing of checks, payroll distribution, inventory records, material distribution, billing methods, accounts payable methods, etc. Their use in executing these essential tasks has been so great that very little time remained in an otherwise busy schedule to serve the industrial accountant in the solution of the many problems before him. Is there a possibility that the future offers a ray of hope in his dilemma? Have scientific and engineering developments come to a point where these and many other business problems can be solved more quickly, more efficiently, and even more accurately? It can be stated that this possibility exists.

COMPUTING DEVICES IN RETROSPECT

Man's desire to create some mechanical means for aiding him in carrying out simple arithmetic processes dates back to very early times. Computing machines are not a product of this century. One of the earliest computing machines on record was constructed by Pascal (1623–1662), a Frenchman. The German philosopher Leibnitz (1646–1716) is credited with having built one of the first machines capable of performing the four operations of arithmetic. Most modern mechanical calculating machines have really nothing basic in them that was not in Leibnitz's machine. Of course, many refinements have been introduced but the fundamental idea was never changed. However, these machines were not used and known very widely as it was still impossible to duplicate parts and still achieve reliable results as is now done by modern processes of fabrication. When the modern tabulating machine with its punch card was introduced, it had a tremendous influence upon business and financial procedure. If, today, reliance still had to be placed on long-hand methods, the scope and complexity of present-day business problems would be practically impossible. This new arithmetical technique has been so widely adopted that over 10,000 tons of punch cards are used each year in this country. Refinements in the punched-card method have included use of electrical contacts through the holes instead of mechanical connections; use of photocells; use of continuation of holes to give a greater amount of information carried by each card. While these inventions and developments constituted invaluable aids in some fields of human endeavor, complex problems arose in other fields, such as the physical sciences, that made

specialized devices necessary. Just as higher mathematical systems had to be invented to deal with theories which could no longer be handled through ordinary arithmetic, so new devices had to be designed to make these theories of practical value. The construction of large-scale, continuous variable machines, such as the differential analyzer, and electric circuit analogy devices like the algebraic "Root Extractor," permitted the solution of certain types of differential and algebraic equations.

At the start of World War II, air attack brought the application of these techniques into the forefront in the design of antiaircraft fire control equipment. Not only was it necessary to track the plane and quickly compute its future position so that the guns could lead the plane by the right amount to insure a hit, but enormous amounts of calculations were required to provide advance data to the antiaircraft fire control director about the path of the shell fired by the gun at various elevations under various climatic conditions. The immediate solution of these problems meant the creation of large computing groups at computing machine centers such as the Moore School of the University of Pennsylvania, the Massachusetts Institute of Technology, the Ballistic Laboratory of the Aberdeen Proving Grounds, and other places. Great attention was sharply focused upon the need of adequate computing facilities to speed engineering design by mathematical solution rather than by experimental techniques, for the war-vital ballistic problems could not be solved experimentally.[1]

Somewhat in anticipation of this future need, a differential analyzer was invented and constructed in 1931 by Dr. Vannevar Bush at Massachusetts Institute of Technology, followed in 1935 by an improved model at the Moore School of the University of Pennsylvania and another one later at the Ballistic Laboratory at Aberdeen. The work in this development created the Differential Analyzer No. 2 at MIT and the IBM Automatic Sequence Controlled Calculator at Harvard University in 1943. Yet the pressing need for more and faster computing devices led to an entirely new and revolutionary attack on the problem in the spring of 1943 at the Moore School of Electrical Engineering of the University of Pennsylvania, ending in December, 1945, with the invention of a purely electronic device, known as ENIAC.

THE ENIAC

The successful completion of the first all-electronic general-purpose computing machine, representing the pioneering electric mechanism in its field, opens the future to the development of business machines heretofore undreamed of and may revolutionize the use of mathematics in engineering, thereby changing many of our present industrial design methods.[2] This mathematical robot, known as ENIAC (Electronic Numerical Integrator and Computer) was designed and constructed for the Ordnance Department at the Moore School of Electrical Engineering at the University of Pennsylvania in Philadelphia. This machine is capable of solving many technical and scientific problems so complex and difficult that all previous methods of solution were considered impractical. The ENIAC is capable of computing a thousand times faster than the most advanced general-purpose calculating machines previously built. The electronic methods of computing used in this

[1] The present state of development of radar presents the possibility of solving ballistic problems experimentally.

[2] See *New York Times*, February 15, 1946, "Electronic Computer Flashes Answers, May Speed Engineering."

new invention make it possible to solve in hours problems which would take years on a mechanical machine—a time so long as to make such an undertaking impractical.

"However, the ENIAC was constructed to do not only this job but to be an all-purpose machine, that is, it could carry out the elementary arithmetic processes of addition, subtraction, multiplication, division, storing of number, and calling upon the functional value of a function for some value of its argument. With these simple processes and sufficient speed it is possible to carry out more advanced computations, such as differentiation and integration, in a practical and highly accurate way."[3]

Of course, a hydrodynamical problem in ballistic research could be solved by simple desk-type computing machines and competent help, but the time involved would be so enormous that it would not even be attempted. Tabulating equipment or the newer types of digital machines could do the work, but it might well take a year or so to do it. On the ENIAC, however, the job could be done in about one week. The difference between the electronic speed of the new computer and any other machine means the difference between the possibility of obtaining a practical solution and leaving the problem in the category of those that are formulated but never analyzed, or perhaps of those that are formulated and finally tested by multitudinous experiments over a long and costly period of time and effort. For it must be remembered that the basic time to carry out any addition (or subtraction) in ENIAC is 200 microseconds (i.e. 1/5,000th of a second). At the dedication exercises one simple demonstration was given to the guests by adding a number to itself 5,000 times. The answer appeared in one second, and no one present could more than blink between the start and finish of the problem.

[3] See "Project PX—The ENIAC" by J. G. Brainerd in the *Pennsylvania Gazette*, University of Pennsylvania, March, 1946, p. 17.

INDUSTRIAL IMPLICATIONS

In considering the undertaking of a problem mathematically susceptible of solution by conventional computing methods, the practical aspects of time and manual labor cannot be overlooked. Leaders of our scientific world have been aware of many problems which have gone begging for want of practical means of solution. The development of new mathematical techniques has been stalled by the lack of mechanical aids to test new theories.[4] Indeed, the present computational methods are still based on systems advanced by Karl F. Gauss (1777–1855).

In the fields of industry the first practical application of this new high-speed computing device was to a mathematical problem in nuclear physics. The possibility of finding a solution without the necessity of innumerable experimental stages conducted over many years will close the technological gap between theory and practice. The development from the discovery of chain reactions to industrial application of nuclear physics is comparable to the development from the discovery of fire to the invention and manufacture of steam engines and turbines.[5] High-speed computers will indeed hasten the development of new design in transformers, rectifiers, generators, motors, gas turbines, Diesel and jet-propelled engines, aircraft, and other industrial machinery. Their greatest influential contribution, however, lies in the release of the scientist's thinking from the drudgery of the multitude of minute and painstaking computations,

[4] See such discussion in *Theory of Games and Economic Behavior* by John von Neumann and Oskar Morgenstern, Princeton University Press, 1944, Chapter I.

[5] See Chapter 2 on "Statement of Problem" in the official text on *Atomic Energy* prepared by Henry D. Smyth, Princeton University Press, 1945.

correlations, collations, differentiations, integrations, and transformations. This freedom for thought can also be given to industrial management.

ACCOUNTING SIGNIFICANCE

The commercial side of our modern society has never been slow in adopting the latest design in computing machines. The public has been aware of the necessity of their use in modern business institutions, such as banks, life insurance companies, large-scale manufacturing companies, accounting and engineering firms, and domestic and foreign trading houses. In such establishments these machines are the life blood of their transactions. The businessman has long made use of mechanical aids in reasoning. Because of the accelerated tempo of modern business affairs, machines of higher speed remain a continuing necessity. Let us see in what way the advent of the ENIAC can mean not only entirely new types of business machines but may well also revolutionize methods and systems of dealing with everyday business transactions.

Nearly everyone has seen or used electronic tubes at one time or another. These are the tubes in home radio sets, the transmitters at broadcasting stations. The fluorescent lights in factories, stores, and homes, the X-ray tubes used by doctors and dentists, the picture tubes in television receivers, and a host of other devices operate on electronic tubes. In recent years electronic tubes have won a place in industry and help countless tasks to be performed more efficiently and accurately than ever before. High-frequency radio waves used to heat-treat steel for gears and tools are produced by electronic tubes; the bonding of layers of plywood in the manufacture of plywood airplane propellers uses them. The speed of electric motors under varying load conditions is controlled by them. In resistance welding, in various highly specialized instruments, in distinguishing shades of color, the electronic tube has been called upon to measure and control chemical and physical qualities. A large variety of electron tubes have been developed that literally "hear," "see," "feel," "taste," "smell," "calculate," and "talk."

This electronic tube can be pictured as a valve that controls the flow of electric current through a circuit much as a valve controls the flow of water through a pipe.[6] An electronic tube does not generate an electric current any more than a kitchen faucet manufactures a stream of water. Unlike the valve, the electronic tube has no moving parts and very little mechanical inertia to overcome. Its action is completely electrical; therefore it operates with nearly the speed of light, and that is one of its most valuable features. Another valuable feature is that only a tiny amount of energy is required to control a large amount of current flowing through the tube. The speed of the electronic tube is and must be the prime factor of this new, as well as of any future, computing device. As the basic principle of any computer, such as an adding machine or a comptometer, is the breaking up of complex operations into simpler component operations, so any new invention must likewise break the operations into a combination of additions, subtractions, and the like. The principle of serializing or arranging in sequence would greatly lengthen the time required to solve complex problems. But it is obvious that only one method can achieve the desired result: the device must be electronic and use electronic tubes. Electro-mechanical devices as mentioned above would be too slow when vacuum tube circuits can be created that are from 10,000 to 100,000 times faster. However, the speed of the elec-

[6] *How Electronic Tubes Work*, issued by General Electric Co., 1943, p. 4.

tronic tube will be of little value unless it is possible to feed the information to the machine in such a way that speedy results can be obtained.

IN-PUT

Many of our present-day business machines store the information gathered on cards by means of holes punched in places desired. The machine itself is controlled chiefly by a plugboard or wiring unit with additional control from the cards themselves in certain cases. As the cards are fed into the machine, one detail of a calculation can be carried out time after time. If, of course, additional different operations should be performed a modification of the plugboard or wiring unit is necessary. Therefore, it seems apparent that much work is done by the operator in taking the cards from one machine to another, in arranging or sorting them in sequence, and in changing the boards. In place of paper cards the Harvard Calculator uses a paper tape in which holes are punched to feed the problem to the machine. As long as these computing devices utilize mechanical elements and relays as their essential components, the speed at which paper cards or paper tape may be put in, read, or punched is generally adequate. Yet paper, either as a card or as a tape, is not the only material available. Various types of film, such as moving picture film and special cellulose tapes, are possibilities. The most suitable material, however, seems to be a tape or wire of magnetic material on which the information is recorded in the form of small magnetized regions. The recording on the wire should be performed by a typewriter similar to the ones used in offices. In order to check the information that is recorded magnetically, a paper tape would be printed at the same time. The wire can store information much more compactly than it can be stored on punched cards or paper tapes. This wire can run at high speeds, is not easily damaged by handling or repeated use, will be naturally rust-proof, and can be used over and over again through erasure of the magnetic impulses. The cards or tapes constitute that operational characteristic of any computing device generally classified as the external memory element.

But after the external memory element places the information in the machine, the so-called internal memory element must be called upon to solve the problem. The internal memory may be thought of as falling into several categories. There is first the problem of gathering the empirical data that are known before the machine is started. Such data can be remembered by the setting of switches on the so-called function tables or by pre-setting a number of circuits. Then there is the problem of instructing the device so that transfers between the various memory units take place, causing the arithmetic units to perform desired operations on the numbers. And finally, the problem exists of storing the numerical data which are calculated in the course of the computation and which must be available for other portions of the computation. Although for the devices using electrical components the existing methods of internal memory processes seem sufficient, it is obvious that particular attention has to be paid to this problem for an all-electronic computing machine. But the creation of a memory element that not only stores the empirical data known before, as well as the instructions required to specify and carry out the calculation, but also serves for the storage of all numerical data that have been calculated in the course of the computation of any problem, no matter how complex, will present itself as one of the greatest achievements in the construction of modern

high-speed computing devices.[7]

The internal storage facilities might be looked upon as units consisting of a number of vacuum tubes that will be able to retain many digit sequences in a very definite time relationship. As a matter of fact, the development of electronic tubes points to an internal high-speed memory capacity of about 2,000 ten-digit decimal numbers. Yet, the storage of the computation is not the only advantage of this memory element. At present, the changing of plugboards, the setting of switches, and the plugging in of many interconnecting cables is necessary to change from one type of problem to another; the future computer, however, will store such operating instructions in the same manner as the computation itself is stored. By such a method the total storage capacity is utilized and at the disposal of the operator who can allocate part of it to operating instructions, part to function tables, part to the numbers that enter into and come out of the calculation.

Emphasis has been placed above upon the need of an external memory device that would read and record the information in line with the speed of the tube. As a medium a magnetic wire was considered. This suggested medium is also of importance in connection with the collating and sorting of the data. These operations are commonly handled outside the regular computing machines. Sorters with card-matching or collating devices attached constitute the generally accepted method. It is generally believed that card-sorting machines lend themselves better to this type of operation. Yet if, in computing a problem, sets of numbers are held in the electronic tube it seems quite logical to complete the sorting and collating within the machine itself. It is true that the sorting and collating of cards amounts to arranging or rearranging them in a definite order. When paper tape is used this arrangement is not feasible, as the old tape cannot be used any more. Not only can the magnetic wire be used again as stated above, but the speed of the electronic tube allows also a reading and recording of the information in a new sequence or new order on a new magnetic wire at something like at least 5,000 pulses per second. If it is desirable to collate the data no great difficulties will be encountered. The machine would be instructed to select the numbers or words that are to be placed on the new wire. Again working at the speed mentioned, the magnetic wire collator will be much faster than the card collator.

[7] See editorial page in *Electronic Industries*, August, 1945, page 73, in which Dr. V. Bush proposes an Electronic Desk Library.

OUT-PUT

Just as the information is fed into the machine by means of a magnetic wire, so the information can be recorded on this medium upon completion of the computation. It is, of course, desirable to have the results available in some printed, photographic, or graphic form. The printing of the data from a magnetic wire should offer no difficulty. A typewriter or printer type of machine is now being used with other computing devices. When, however, several reports or tabulations must be prepared which must be distributed to many parties interested, photographic reproduction of the tabulations by the automatic printer may be used. Such photographic reproductions can be issued in their final and most convenient form, since all sorting, collating, and interpolating has been carried out by the computer. Even more useful will be the possibility of presenting the final answer graphically. Although today tabulations are prepared "on time," considerable time is spent and lost in

"plotting" the tabular results and in drawing the curves. But in the future it will prove easier to let a high-speed computer solve the problems and simultaneously "plot" the results on the screen of a cathode ray tube. The graph can then be run off whenever desired. Such a visual output immediately available can lead the way for investigating unfavorable trends quickly and efficiently.

The question must have come to the mind of the reader: Just how large a machine must be constructed to do all this work and what will it cost to run such a piece of equipment? It must be admitted that the existing laboratory type of high-speed computing machine, mechanical or electronic, is of tremendous size and was built at considerable expense. But the development of electronic equipment will lead to the construction of computers which (if one may speculate) should be somewhat larger than the present electric bookkeeping and accounting machine known as the printer. Floor space of tabulating departments will be reduced considerably, yet this will not be the only saving. As it has been suggested that a magnetic wire instead of a paper card is to be chosen as the external memory medium, space and material-cost savings will be considerable. If we assume that an 80-column tabulating card is equivalent to about 300 pulses on about 3 inches of wire, then a commercial spool of about 12,000 feet in length can roughly fill the equivalent of 50,000 completely filled cards. The wire would weigh about one-half pound and could be stored in a small metal box. 50,000 cards would fill 25 tabulating card boxes.

With regard to personnel, training would have to be given in the future just as the operator is now being trained to handle tabulating equipment. As the new device is improved and perfected, the operator's task will be more systematic and mechanical. A few dollars' additional first cost in equipment will be repaid many times in lower cost of tube maintenance as well as greater freedom from service interruptions. The personnel will become free to watch the results, make adjustments, and serve fully and competently in the solution of the problems.

THE TASK AHEAD

It was stated in the introduction that with the restoration of competitive enterprise, management will need a progressive accounting organization to present the facts upon which broad and decisive policies can be based. With the construction of the all-electronic computing device, the field and the future of the industrial accountant has been expanded tremendously. The field of general accounting seems to have taken the lead in these modern inventions, when we learn that "the electronic art is making inroads into many manual methods in the business operations of telephone and telegraph systems. There new applications include dialing equipment, automatic time recording and bill computing facilities, sorting of vouchers, etc."[8] "The installation of the first automatic ticketing of telephone calls system at Culver City, adjoining Los Angeles, points to the future application of mechanical methods to the accounting processes. A possible method is to arrange the ticketer so that, in addition to the digits which it now prints, it will print also their equivalents in code marks which can be recognized by photoelectric scanning. Other forms of record produced by different types of recording mechanisms may be found advantageous, and the equipment for use at the accounting center may be designed to mechanize the accounting processes to any degree found economical."[9]

[8] See editorial in the January, 1946, issue of *Electronic Industries*, p. 47.

How much more valuable for the individual concern, as well as for society as a whole, will the work of the industrial accountant become when the problems facing him can be thought about, solved, and presented in the shortest possible time. For the important fact should be remembered that the creation of these new machines does not replace creative thinking. On the contrary, it will encourage further thought, since it will free the accountant from the time-consuming burden of routine calculation. His time can be devoted more than ever to the solution of manifold problems such as inventory valuation at average costs instead of current purchase price, unit costs of increasing production beyond present levels, the incremental or differential cost of added output compared with selling prices, the minimum sales price in case of a shutdown to avoid too drastic losses, the abandonment of part of the output of a plant, the additional cost incurred when a "sideline" is introduced to utilize spare time and machinery and even out the production schedules, determination of costs connected with a change-over in production methods, the old problem of interest as a cost, and a host of others.[10] But these special cost problems too often must take a back seat only to be assigned later to other departments having a statistical or engineering function; and this leads to antagonism and misunderstanding among the personnel. While these problems rightfully and naturally fall in the realm of the industrial accountant, his time, efforts, and abilities have been taken up with the problems of daily, weekly, and monthly cost determination. In the future, however, his interest must be centered upon the dynamic features of cost analysis and cost control for recognizing, evaluating, and presenting new and alternate strategies to be pursued because of greater output, greater turnover, greater employment. His accurate and intelligent appraisal of the perplexing problems connected with differential costs, burden allocation under varying conditions, distribution cost analysis, development costs, etc., will influence considerably the price- and policy-making decisions of the company's top executives. In this task the new electronic aids will prove themselves to be of outstanding value.

If the accountant by his own initiative, together with this modern mechanical assistance, can furnish management with the leads necessary for doing a better job, he will also, in the last analysis, serve society and his country. It has been stated that "Accounting questions have ceased to be wholly domestic and internal problems of the individual businessman or corporation. In various ways they have become 'affected with a public interest,' as the phrase goes."[11] When, however, in the near future, high-speed computing devices will bring to light the many still untouched and untried factors of costs and production, and when these new premises and preconceptions can be presented speedily and accurately, then these up-to-date results will influence not only action by governmental bodies, decisions in the field of economics, and juridical decisions, but also the most disputed areas of labor-management relations. Should the accountant be able to present facts and figures that are so valuable in this often highly controversial field in a manner which will create a better understanding of the company's position, then the work of the industrial accountant might well prove to be of inestimable importance.

[9] See "Automatic Ticketing of Telephone Calls" by O. A. Friend in *Electrical Engineering*, March, 1944, pp. 81–88.

[10] See "Costs for Special Purposes" by Edward T. Hanley, *NACA Bulletin*, November 1, 1945, pp. 171–177.

[11] See "Accounting as a Means of Social and Economic Control" by T. H. Sanders, *NACA Bulletin*, December, 1944, p. 319.

LOOSE-LEAF AND ACCOUNTING

HERBERT J. STOECKEL

WHILE EITHER casually thumbing or seriously plumbing the books of a client, many an accountant very likely has often wondered how loose-leaf records of today originated. It's an engrossing and little known story, told here for the first time in its entirety.

The year 1946 may be said to mark the fiftieth anniversary of loose-leaf bookkeeping although the first recognized loose-leaf system, the Page-McCleery Order System, had been sold in Chicago at least ten years before in 1896.

For many years it had been standard bookkeeping practice to enter orders in a book, fill the orders, and then post the ledger from the order book. To complicate matters further, many meticulous business houses insisted that the orders be recopied into the bound day-book after the goods had been shipped and invoiced and before posting. In fact, so cumbersome and tedious was the task of copying all orders that, to facilitate bookkeeping, some concerns used order books for alternate days. One was used for Monday, Wednesday, and Friday, the other for Tuesday, Thursday, and Saturday. That delays and numerous errors resulted from this antediluvian method of duplication is obvious.

Edward C. Page and J. B. McCleery were order clerks for Selz, Schwab & Co., a Chicago wholesale shoe house. They conceived a basic idea whereby salesmen's original orders, recorded on uniform multiple sheets, were inserted in a sheet-holder as received, and, without transcription, were used for selecting, shipping, and billing the order. Then the order blanks, paged consecutively, were permanently filed in a transfer binder as a source for posting direct to the ledger and for future reference.

The "inventors"—if we may call them so, since their idea was an intangible—developed their earliest blanks or sheets for the shoe business. When they saw the system could be applied to all classes of business, they persuaded Rubel Bros., Chicago printers, to manufacture and market the idea. Rubel Bros., out of business these many years, were content to sell the system chiefly in the Chicago area. This was about 1884 or 1885, possibly 1883. Page and McCleery had been granted their patent March 6, 1883, after having filed their application September 26, 1882.

The patent was solely for the order-holder which was necessary to carry and protect the order sheets in their course through warehouse, stock, and shipping departments, and eventually back to the office. The transfer binder offered no difficult in design or manufacture since it was a binder of the crudest type, with vertical threaded posts inserted in the bottom cover. The two holes in the top cover fitted over the posts, nuts screwing down the cover on the filed orders. No attempt was made to patent this binder, for the simple reason that it had no basic features. In a way the binder was merely an offshoot of the already popular arch file, minus the arches. The writer suggests it was the refined equivalent of two spikes driven through the end of an oblong board, with another board fitting over the spikes. Another convenient model would have been the Tibetan book of yesterday and today, which is literally food for thought since it is not unlike a sandwich, with the consecutive loose pages merely inserted between the top and lower wooden oblong covers.

At the risk of oversimplification, we may

add here that the Page-McCleery Order System is not to be confused with the many "binders" and "files" which had been patented previously in the nineteenth century. While a few of these have survived to this day—the "Shannon File," the "Emerson Binder," and "Shipman's Common Sense Binder," for instance, form a trio of hardy perennials—most of them were impratical, never manufactured, or soon passed out of the picture. The Page-McCleery Order System, let it be emphasized, was the world's first practical loose-leaf system and the forerunner of loose-leaf bookkeeping.

Little is known about Page, even less about McCleery. Page was born in Chicago July 21, 1844, the son of Peter Page, and attended a Chicago high school. He was at Yale, class of 1864, but remained only through his freshman year. No later information whatsoever was received by Yale from him or about him. Both Page and McCleery after leaving Selz, Schwab & Co., were employed by Rubel Bros. Page died obscurely in Chicago. McCleery later was associated with another printing and binding company, organized by Rubel Bros., and became its plant superintendent. This enterprise proved unsuccessful. Here McCleery's trail ends.

At first Rubel Bros. had the loose-leaf order system field entirely to themselves. However, in 1888 the idea attracted the attention of the late William A. Vawter (1858–1921), who then headed a struggling printing concern in Chicago, the Baker & Vawter Co., known subsequently as the Hadley & Vawter Co., and the Baker-Vawter Co. The Baker & Vawter Co. developed its own order system and soon offered Rubel Bros. stiff competition, gradually dwarfing the business of the original manufacturers.

The idea was anybody's. Rubel Bros. had no monopoly, although they strenuously objected to the activities of their upstart competitor, even to the extent of launching a lawsuit charging infringement. The suit hung fire in the courts for years, so long, in fact, that both parties were brought to realize that there was an advantage in not having a court decision, as the delay tended to deter other printers or binders from entering the field. The Baker & Vawter Company merely brought out what it claimed were a superior order-holder and transfer binder. In other words, Vawter built a better Emersonian "mouse-trap" than his neighbor, but instead of waiting for purchasers to find a way to his door, he sought out customers and ably demonstrated his wares. As events later proved, Vawter had his eye on the entire United States market. To him even Chicago and the Middle West were pigmy territory.

The loose-leaf industry, then in its cradle days, needed something to make it grow. The loose-leaf ledger was destined to be the stimulator.

It may be explained parenthetically at this point that the loose-leaf industry, unlike other branches of the bookbinding industry, has no written history, aside from the modest researches of the writer. Things moved so fast when loose-leaf bookkeeping became popular in the late 90's and during the first decade of the century that no authoritative scribe, either self-appointed or commissioned, set down the facts as new bookbinding and bookkeeping history was being made.

The heads of the various pioneer loose-leaf concerns, who after the advent of the loose-leaf ledger were soon describing themselves as "business systematizers" or "methodizers," were, both individually and collectively, too busy fighting the old-fashioned and strongly intrenched blank-book fraternity to take time out even to tell briefly how they happened to embrace the new loose-leaf creed or why.

Again, with the introduction of the new

type of ledger, manufacturers who sold their services and loose-leaf systems direct to businessmen sprang up like mushrooms. Competition was keen and often became bitter. Now and then there was dirty work at the crossroads. Hence some preferred to say little or nothing for publication. It was brisk action which counted. The most fruitful source for material is the stationery trade magazines and defunct trade papers that catered to bookkeepers of the period. However, here the material was more often of the "write-up" category, with pertinent facts at a minimum.

While there is a clear record of the later period of loose-leaf, there are some missing pages in the opening chapter of "The Book of Loose-Leaf" dealing with the origin of the loose-leaf ledger. Although the facts, assembled a half-century later, after the manner of a jig-saw puzzle, have been pretty well established, some are still lacking. Even at this late date the writer has been fortunate in obtaining the reminiscenses of certain "old-timers" of the loose-leaf industry who have been most co-operative and helpful. It is hoped that this article may stimulate further interest in the subject and that additional information may be forthcoming which will bring the early loose-leaf bookkeeping picture into even clearer focus.

Three men—the late William A. Vawter, the late Leon M. Leslie, and the late Stephen T. Williams—are associated with the basic idea of supplanting the bound ledger, used for centuries, with the loose-leaf ledger. Williams' exact role still remains very vague. The only mention of his connection with the birth of loose-leaf accounting was a few casual lines in an article which Vawter wrote for the May, 1917, issue of *Office Appliances*, the Chicago stationery trade journal.

In his article, however, Vawter mentioned Leslie at considerably greater length. Weighing each word carefully, as we shall proceed to do by quoting entirely the paragraphs in Vawter's story dealing with Leslie and Williams, we find that the question boils down to whether Vawter or Leslie was the originator of the loose-leaf ledger idea, or whether, as often happens, the idea occurred to each at about the same time, with the possibility that even Williams contributed his share of inspiration.

Vawter's account, together with a somewhat similar reminiscent article which he wrote for a Baker-Vawter Co. house organ, and hence for private distribution, are, so far as is known, the chief authoritative source material available. However, it was only in the *Office Appliances* article that Vawter mentioned Leslie and Williams.

Vawter first told how few were the items sold until 1894 by the Hadley & Vawter Co. Among these were the loose-leaf order system and the bill-and-charge system which the former had inspired. Since no customer used a great amount of goods, Vawter related, it was necessary to sell a very large number of customers. According to Vawter, in those days the Hadley & Vawter Co. had its bound ledgers made 1,000 pages to the book, with eight accounts to the page. An ordinary index was used. After the ledger was filled, a second ledger and index followed in successive order, and so on.

Vawter said he experienced considerable trouble in referring back to customers' accounts since it was sometimes necessary to get down two, three, or more ledgers. This led him "to study along the lines of devising some kind of a ledger where an account could be kept together in one place no matter how long a period it covered."

The result was a ruled ledger form and an index, both on order blank paper, which were placed in a transfer binder sold with the company's order system outfit.

"The loose-leaf ledger was born early in

1894 in the office of our company"—we quote from Vawter's article of nearly 30 years ago—"and used in a common 3/16" solid post binder. When this was devised it was simply to meet the requirements of our individual needs, and we did not dream that a loose-leaf ledger was anything that could be gradually sold."

Here is where Leon M. Leslie enters the picture. "This very crude loose-leaf ledger was being used in our office and was gradually being developed as far as its usefulness was concerned," Vawter continued, "when in May or June, 1894, a man by the name of L. M. Leslie came into our office . . . and stated he had devised an accounting scheme for use in binders, and as we had the best binder on the market he wanted us to make him prices in large quantities of them because they would sell rapidly. We talked with him about his scheme and learned enough to know that it was something along the line of what we had devised and were using.

"The afternoon of the same day a man by the name of S. T. Williams came into our office and told a story very similar to the one told by Mr. Leslie, and in talking with him regarding his scheme it developed that he was also figuring along the line of what we were using and thought to use our binder because he believed it to be the best on the market.

"Mr. Williams was a devising accountant of a good deal of ability and Mr. Leslie had formerly been connected with him, but at the time this occurred they were not in business together, but each one was connected with a concern of his own.

"A little later in the year (1894) Mr. Leslie was employed by our company in the capacity as a salesman, having either sold or disbanded the company with which he had been connected. During this time we had, of course, become convinced of the commercial possibilities of the loose-leaf ledger and were developing it as fast as we could . . . . By the fall of 1894 we had evolved the ledger proposition far enough to put Mr. Leslie out on the streets of Chicago to try and sell it. A very few orders were sold in the late fall of 1894. . . . In 1896 Mr. Leslie left our company . . . ."

The question naturally arises: Who were these two men, who on the same day, one in the morning, the other in the afternoon, called on the Hadley & Vawter Co., with the identical objective of interesting that nascent loose-leaf organization in applying loose-leaf to bookkeeping?

Both Leslie and Williams were personalities out of the ordinary. The association of their names with the beginnings of loose-leaf bookkeeping gives added color and piquancy to this almost forgotten true story of American business whereby a new era of record-keeping was ushered in.

Leon Mangold Leslie was born in West Alexandria, Ohio, June 28, 1861. He attended the local grammar school. His father, John Leslie, was a cabinetmaker and made the local caskets. Leon Leslie became a salesman for the Detroit Metallic Casket Co., of Detroit. His son, John L. Leslie of Englewood, New Jersey, recalls that his father was in the bank systematizing business about 1890 and 1891 and in that work made far-flung trips throughout the country as far as Texas and California. "He made considerable money," John Leslie informs the writer, "and he was working on some idea in the early 1890's, but it was scotched by the panic of 1893." The family moved to Chicago at this time; the son remembers the World's Columbian Exposition of 1892. In 1896, the family left Chicago for New York City. This coincides with the time Vawter says Leslie severed his connection with the Hadley & Vawter Co.

Before leaving Chicago for New York City, Leslie established Leon M. Leslie & Co., and attempted to compete with the Hadley & Vawter Co., but did not prove

successful as the head of his own enterprise.

In a deposition filed in a lawsuit in 1908 by the Baker-Vawter Co., whereby Baker-Vawter sought to prevent infringement on the sectional post and the crimped binding edge of loose sheets, two epochal developments in loose-leaf, Leslie testified that he was associated in 1893 and 1894 with the W. A. McCall Co., a Chicago firm of public accountants and business systematizers, when he first became interested in applying loose-leaf to accounting. This deposition, along with others, is available in the Federal Court records in Chicago and New York City, where the suits were brought.

In his deposition Leslie stated that in January, 1894, the Hadley & Vawter Co. sold order blank binders to the W. A. McCall Co., and made leaves for them. In the same deposition Leslie said: "In the fall and winter of 1893 and 1894 I first got up a device using a Hadley & Vawter binder with leaves creased and hinged and an index running through the book. The principal advantage of that device claimed at the time was that the book required no spacing of accounts. An account could have as many leaves as necessary without having to carry or continue the account in various places of the book, thus giving it sequential order."

Leslie was with the W. A. McCall Co. until the spring of 1894 and was with Hadley & Vawter until May 1, 1895; from May 1, 1895, with the Baker-Vawter Co.; and from July 1, 1895, to January 1, 1896, was manufacturing loose-leaf devices for himself. From January 1, 1896, until November he was with Leon M. Leslie & Co. From November 20, 1896, until 1906 he was associated with the William Mann Co., New York City and Philadelphia.

Leslie's fertile mind also produced another innovation. In the early loose-leaf ledgers the sheets of heavy ledger paper had a muslin hinge, later superseded by crimped margins with punched holes for the binding posts. It was still necessary to lift the top cover and a number of the sheets beneath in order to remove a page and insert a new one. In 1895, Leslie came up with an idea that made removal easier. With a pair of shears he cut a slit in the binding edge of the ledger sheet deep enough to reach the binding post holes. These slotted holes made it much easier to change a page as needed. The quick manipulation is part of standard bookbinding practice today.

So far as is known, the above testimony is the only specific statement ever made by Leslie that he had conceived the idea of the loose-leaf ledger ahead of Vawter. Deduction would indicate that Vawter was referring to the W. A. McCall Co. when he spoke of the company with which Leslie was associated at the time. Leslie, after being with the Mann Co., retired to Old Tappan, New Jersey and bought a 100-acre farm at Collignons Mills, on the Hackensack River. When the mills burned down, Leslie applied for a post office, and got one under the name of Leslie, N. J., which existed until rural free delivery came through. In his later years Leslie was a real estate operator, and was interested in mortgages. He was councilman and justice of the peace in Old Tappan for many years. He died in November, 1937, at the age of 76 at the home of a daughter in Leonia, N. J., of an illness since known as Gehrig's disease.

Stephen T. Williams started his colorful career as a bookkeeper in Cincinnati, where he early demonstrated his ability in devising shortcuts in accounting and bookkeeping.

Rummaging, in 1942, through the attic of the 100-year-old farmhouse, which had been owned by Leslie in Old Tappan, the writer found several old blankbooks which read as follows:

"S. T. Williams Invoice Maturity Rec-

ord: Entered According to Act of Congress at the Office of the Librarian of Congress at Washington, D. C., January, 1890, by S. T. Williams. Accountant and Auditor, 43 E. 4th St., Cincinnati, O. Inventor and Manufacturer of all Kinds of Labor Saving Blank Books."

At the bottom of the spine, or back, of each blankbook was stamped: "Designed and Manufactured by S. T. Williams, 41 E. 4th St., Cincinnati."

Williams was listed in the Chicago directory in 1893–94 as a public accountant and also in the New York City directory of 1899. Charles E. Sheppard, loose-leaf pioneer and head of the C. E. Sheppard Co., Long Island City, New York, has told the writer that when he (Sheppard) first came to New York City from Chicago in 1900 Williams already had blossomed forth as a leading specialist in the installing of business systems. At that time Williams referred to himself as a "business economist."

Williams proved a valuable ally in spreading the gospel of loose-leaf, and did much to erase the deep-seated prejudices shown by financial institutions towards the then revolutionary loose-leaf devices. Their argument was that removable pages made easier the juggling of records and this facilitated defalcations. "Williams proved there was no basis to such suppositions, and that the exact opposite, in fact, was true," Mr. Sheppard has observed, in paying homage to the memory of this pioneer missionary of loose-leaf.

Williams built up a business, known about 1912–13 as Stephen T. Williams Staff, which brought him an income of around $75,000 a year. However, he made unfortunate investments and died by his own hand in New York City in January, 1914. The *New York Times* obituary referred to Williams as "a retired economist."

Refinements of the first crude loose-leaf ledgers and other loose-leaf record books followed in startling succession. In rapid sequence came the sectional post, the slotted hole, and machine crimping of the edges of the sheets so that the pages would lie flat. Loose-leaf had arrived, although the *World's Work*, in its November, 1906, issue carried an article, with a great air of discovery, captioned, "The Loose-Leaf Revolution in Bookkeeping."

Old-timers in the loose-leaf and blankbook business are in general accord that it was Vawter who put loose-leaf devices, including the ledger, on the map nationally and internationally. Others followed in spreading the popularity of such devices. Baker-Vawter were the first specialists to deal direct with the customer through trained accountants to devise and install complete loose-leaf systems. It might be added that in 1927 Remington Rand acquired Baker-Vawter, which has since been incorporated in the Remington Rand Systems Division.

Doubting Thomases, both in the business world and in the book-binding industry, suddenly became aware that into the age-old technique of keeping records something new and revolutionary had been born. And it is not too much to say that only loose-leaf methods made possible the later extended application of machines to the making of accounting records.

EDITOR'S NOTE: Many details about the people who contributed to the loose-leaf developments are available in the trade periodical *Bookbinding and Book Production;* especially in the following numbers: August, 1938; May and August, 1939; May and December, 1940; October, 1941; February and August, 1942; and November, 1944.

PRACTICAL SAMPLING FOR AUDITORS

LEO HERBERT

IN THE COURSE of an audit, an auditor may analyze in detail each item in the books. However, in most instances, to arrive at a conclusive opinion in regard to the records, it is unnecessary to collect complete information on each item with which the auditor deals.

To overcome the necessity of checking each item in every investigation, accountants and auditors have employed the method of "test checking" or "sampling." From the test check or sample, a relatively small part of the records, the auditor draws a conclusion as to the general accuracy of the accounting details.

To appreciate the auditor's problems of sampling, one must know about sampling theory as applied to data which an accountant will probably encounter. Sampling theory is basically related both to the theory of probability and to the likelihood of errors. Whenever each item chosen has the same probability of being chosen as any other item in the group, the relationship between the items may be worked out to a precise mathematical point. This may be illustrated by the use of dice; each number on a die has the same chance of turning up as any of the other five numbers; or in flipping a nickel, heads has just as much chance of coming up as tails. Many such mathematical relations were worked out in games of chance long before the idea ever developed of applying probability techniques to statistical analysis.

Random sampling is often used when each item in the problem is in equal proportion to all other items. Auditors seldom use a random sample, since most of the data with which they deal are not of the type which justify using a random sample.

Whenever heterogeneous data, such as those encountered by accountants, are used the method of stratified sampling is often employed. This is illustrated by the analysis of accounts receivable. Frequently an auditor is satisfied with a 100 per cent sample of all accounts above $1,000; a 50 per cent sample of accounts between $500 and $1,000; a 25 per cent sample of accounts between $100 and $500; and a 5 per cent sample of those under $100. All accounts receivable are broken down into subgroups before the sample is taken.

When a sample is selected by design it is often called "purposive." A purposive sample is employed when certain characteristics of the total of the item are already known and the sample is taken to agree with the known facts. A good illustration of a purposive sample in auditing is the usual procedure of examining the first and last months of a period, because the auditor knows the chance for uncovering fraud or error is greatest in those two months.

The theory behind sampling assumes that a small number of items will show the same characteristics as the whole. Only when certain basic rules and procedures are followed, does the sample thus agree with the whole. The major considerations for any sample are:

1. The sample must be representative.
2. The sample must be adequate.
3. The sample must show stability.

A sample is representative when it shows the same characteristics as the whole mass of data in the problem. Many statistical inferences from samples are incorrect because the sample does not represent a true picture of all items.

A sample is adequate when (1) each item has the same chance of inclusion as all other items, and (2) enough items are

included to show the same results in successive samples.

A sample is stable when the results of a sample will continue to remain the same no matter what size the sample may be.

Other considerations which must be heeded are: the relevancy of the sample to the problem, the use of homogeneous data in the sample, and the accuracy of the work in gathering and compiling the sample.

There are limitations on the use of the sample in accounting investigations, however. These limitations may be due to the data themselves or to the person who takes the sample. For instance, a sample may be biased because a particular person takes it, or the sample itself may have a bias which is not readily visible (e.g., the observation may be taken from the most available data instead of obtaining data which are representative). Both types of bias may be present.

Conditions of sampling, especially in auditing, rarely approach the theoretically perfect state in which samples show exact results. However, it is not necessary to have this theoretical perfection in order to obtain benefits from a sample, since a sample which is adequate and representative will give results useful in most practical auditing situations.

There are two major types of problems involved in practical auditing samples: (1) What data are necessary for the study, and how large a sample is necessary to determine whether the data will show what is needed? This, of course, means determining the minimum number necessary for the observation, or the amount above which one need not go to get dependable results. (2) How is it possible to determine whether the sample is adequate and representative?

There are many cases in accounting-statistical analysis in which it is possible to use all the information available and still not have anough data to arrive at a correct conclusion regarding the problem.

The problem of determining how many observations are absolutely necessary comes under the heading of forecasting. The problem of forecasting the size of a sample, unless the problem has been done many times before, usually is a matter of personal judgment. The auditor arbitrarily determines a figure which he considers to be sufficient in the light of his past experience. Before the work is complete, the adequacy of the sample may be checked by mathematical or other methods. For example, if, in auditing accounts receivable, the first confirmation statement returned had an error in it, but the next 25 did not, about the only conclusion at that point would be that there was at least one error in the accounts receivable. If, however, after receiving 500 returned confirmations, there continues to be an error in one of each 25 returned, the auditor could infer that there was an error in 4 per cent of the accounts receivable, and would perhaps check the accounts more thoroughly.

The amount of time and money saved through accurately predetermining the number of observations is easily recognizable. To underestimate the number in the sample would be a worse mistake than to overestimate. When the number has been overestimated, the data can be used; whereas if it has been underestimated, the material is valueless for statistical study and may prove embarrassing to the auditing firm.

After the results from the sample begin to come in, it is possible from these results to determine whether any stability exists in the answers to the questions. Probably the most familiar method of determining when the answers begin to become stable is by separating the returns into random groups. When, through additional returns for each group, the answers in each group

tend to remain the same percentage of the total of the group, then stability may be said to exist.

Mathematical methods have also been devised to determine the size of the sample. Theodore H. Brown of Harvard has devised a table showing the size of the sample when the percentage of permissible error is known. Several limitations exist in this type of table, however, since it works on the principle of probability and many accounting samples do not conform entirely with the laws of probability.

As has been mentioned, the size of the sample, among other things, determines the cost of sampling. Size is no criterion of value, however. The *Literary Digest* Poll of 1936 was large but contained so much error it was worthless. There is then this principle: that the sub-samples must stand alone and not be dependent upon the major sample. The major sample may be large but not contain relevant data or sufficient data for the sub-sample. The size of the sample is determined by the amount of allowable error in the sample.

Difficulties exist in sampling to a greater extent in business or social data than in physical data. Human limitations exist in the sampling of this type of material. Instead of taking a random sample, it is usually better to break the sample down into subgroups, based on some known facts about the whole, and then take a random sample of this "stratified sample. This step is taken so that a correct proportion of the universe will be taken and is known as getting "proportionality in the sample."

L. O. Brown makes the statement: ". . . it was shown that an adequate sample has two characteristics: (1) reliability, and (2) proportionality. In planning a sample every effort is made to obtain both of these characteristics."[1] Problems of finding the reliability and proportionality of the sample and remedying any obvious defects may be major considerations.

Unless an engagement is very small, or a need exists for very great accuracy, time and expense do not allow the auditor to determine by examination of each item in the audit that the transactions and accounts are correct. Yet the auditor wishes to be certain the chances are very high that he has not overlooked an error. As has been stated in the above section on the theory of sampling, it is usually up to the person making the audit to determine which section of the audit may contain the most errors and the number of errors possible in that section.

Testing by sampling in an audit involves the separation of items into homogeneous groups. That is, the representativeness of the sample could not be determined very well if one were testing the type of inventories and the footings of the inventory sheets all in the same sample.

The major groups to be tested by the auditor come under the following headings: accounts receivable balances, accounts payable balances, inventory types, inventory footings, purchase vouchers, cash disbursements, payrolls, cashbook postings, and voucher register footings. Whether the items will be tested completely or only in part depends entirely upon the possibility of error existing in each of the various classifications. The amount of error which can be readily determined depends upon the amount of internal control and the skill of the auditor.

When sampling or test-checking during an audit, the auditor is trying to determine whether there are errors in the books, without examining each transaction. If it were known that there were no errors, the auditor could certify the company's statements without taking the time necessary to go through the details of the com-

[1] Brown, Lyndon O. *Market Research and Analysis.* (New York: Ronald Press Company, 1937), p. 310.

pany's books. However, neither he nor the company knows how many errors there are in the records; that is one of the reasons why he has been called to audit the books and give an independent opinion as to whether the records are kept accurately. When an auditor needs to make a detailed examination of every transaction, costs run very high in the large concerns. If the auditor can convince himself that the chance for error is very slight, it is not necessary to investigate every transaction.

Sampling techniques in auditing attempt to determine the probability of locating errors in the records. When there are only two items to be tested, and one of them has an error in it, there is a fifty-fifty chance that the error will be detected if only one item is investigated. Stated differently, there is one chance in two that the error will be located. When there are a hundred items and two errors, there is one chance in fifty that one of the errors will be located if one item of the total is investigated.

The assumed conditions are true only if the item that is being investigated is selected on a random basis. If the person knew that there were a hundred items to be investigated and he also knew that the error was located in a group of ten items, then when he selected one of the ten, his chances of locating the error would be one in ten rather than one in a hundred.

When an auditor selects footings by months rather than by the number of footings, he is violating the principle of random selection, as he is not selecting a group of random items to be checked. The probability of finding one error in a year's footings is much greater when one-third of the footings are tested than when footings for four separate months are tested. The same principle is true in testing accounts receivable. When there are 3,000 items, it is much better in a 10 per cent sample to select every tenth account than to select the accounts under A, under H, and under R, which would constitute approximately 10 per cent of the total.

Assumed Number of False Items in Group	*Most Economical Random Sample (Approximately)*	*Probability of Encountering at Least One False Item (Approx.)*
Over 40	8%	Over 95%
Over 30	10	Over 95
Over 20	15	Over 95
Over 15	20	Over 95
Over 10	22	Over 90
Over 9	24	Over 90
Over 8	26	Over 90
Over 7	28	Over 90
Over 6	30	Over 85
Over 5	35	Over 85
Over 4	40	Over 85
Over 3	45	Over 85
Over 2	50	Over 75

The first problem, then, in test-checking in an audit is to determine the possible errors located in each of the different items to be tested. How many errors are there likely to be in the accounts receivable? How many errors are to be expected in the voucher register footings; the purchase vouchers; the cash disbursements; or any of the other items to be tested? When the expected number of errors is determined, then if there is to be a reasonable expectation of finding one of those errors, the table above may be employed as a guide in the size of the sample to take.[2]

The percentages shown have been computed by determining the area under the normal curve, and may reasonably be expected to be accurate when the items being tested form a normal distribution. Usually in testing inventories or accounts receivable or payable, the very large accounts are separated and examined thoroughly where-

[2] The above table was taken from Robert H. Prytherch, "How Much Test Checking is Enough," *Journal of Accountancy*, Vol. 74, No. 6 (December, 1942), pp. 525–530. The original material from which the table was formed is found in Lewis A. Carman's "The Efficacy of Tests," "Test-Checking Subjected to Mathematical Analysis—Constructive Article on New Subject." *American Accountant*, December, 1933, pp. 360–366. The preceding two articles are probably the best technical articles on test-checking which have been written in the last ten years.

as the smaller accounts are test-checked. This method eliminates any possibility of overlooking a gross error. If no errors are found in the sample, the probability is very high that there are no errors in the type of items being tested.

While test-checking by public-accountants is a recognized method, very little theoretical study has been given to sampling for public accountants. If an auditor expects to form an opinion based on information devised from samples, it may be necessary in the future for him to be able to prove the reliability of the sample selected. To do this might require that he demonstrate its statistical characteristics.

WHY ONLY EMERGENCY FACILITIES?

WILLIAM Y. ARMSTRONG

SINCE THE termination of the emergency period as of September 30, 1945, there has been a series of debates going on in public and private circles as to the propriety of, and mechanism for, restoring to corporate records any value that may be remaining for facilities which have been fully amortized for tax purposes, and which still have remaining usefulness. It seems to the writer that most of the arguments that have been published in connection with this issue have been in regard to the accounting mechanism for recording in corporate books of account such adjustments as may be necessary to reflect the remaining usefulness of fully amortized emergency facilities. Many of the debaters have seemed to confine their concept of this problem to a rigid verbatim application of stated accounting practices.

Others express opinions that any warranted adjustment should be against earned surplus, unqualifiedly; whereas some urge in an equally convincing manner that such adjustments should be specially earmarked in some different manner. Still others, who agree on the basic facts warranting a reconsideration of remaining usefulness of fully amortized emergency facilities, differ on the desirability of recording such facts—one faction maintaining that the recording of such an adjustment is mandatory, and the other faction contending that such an adjustment should be made at the discretion of management.

All this interest seems to indicate a much more general concern with the topic than is apparent from a review of published corporate statements to date. In view of the apparent wide interest in this subject, it seems that a restatement of some of the issues involved, and a further analysis of some of the basic factors, might assist in establishing a pattern for the solution of this problem.

RECORDS VS. FACTS

The principal feature in recorded discussions of this problem seems to be concerned with the accounting entries that have already been recorded in respect to emergency facilities rather than with the facts which the accounting figures are expected to represent in records other than tax returns. One is simply an accumulation of entries presumably made in accordance with permissible practices at the time they were made. The other is tangible evidence that property has a remaining usefulness, and consequently a remaining value, to

the owner or operator which may be considerably different from that reflected by the records.

These same features have existed to a somewhat lesser degree over a long period of time in regard to manufacturing facilities which through prior depreciation practices have been allowed to become mathematically fully or excessively depreciated, although continuing in use. Prior to T. D. 4422 (February, 1934) costs of facilities were generally allowed to become fully depreciated without regard to their continued use. Since T. D. 4422, which basically required the spreading of the unrecovered cost over the remaining useful life of the property, the rate at which facilities have become fully depreciated has been appreciably retarded. The war years are, however, a temporary exception to this trend. There still continues, particularly in the smaller concerns whose depreciation practices have not had a careful examination by engineers of the Bureau of Internal Revenue, a practice of disregarding useful life as a measure of the rate of depreciation and of allowing costs of major property units to become fully depreciated long before their usefulness has terminated.

Income tax laws and regulations impose definite restrictions on depreciation and amortization practices for tax application. These restrictions will be discussed and commented on in more detail later. The corporate and cost accounting application of this problem can and probably should consider, unfettered by such restrictions, the facts represented by the existence and use of the property rather than the historical records of prior practices.

Depreciation is a gradual wearing out process—a gradual consumption of usefulness affected by wear, tear, use, and obsolescence. The measure of this depreciation in terms of dollars is ordinarily determined by dividing the cost of the facility by the total usefulness as expressed by estimated useful life. As products are manufactured, that usefulness is gradually consumed. Part of the acquisition costs of the production facilities go out the doors of the factory every time products are shipped. If the costs of the facilities used to manufacture the products have, because of prior practices, been fully amortized or depreciated, and are not included in the records constituting the depreciation base, the current price of the products being shipped may not include the proper proportion of the remaining usefulness of these facilities which have been consumed in the manufacturing process. Profits for the period may unnecessarily be excessive by at least the depreciation on such facilities.

If, however, the same facilities which are fully amortized or depreciated are sold outright, the same remaining usefulness will be represented by the proceeds of the sale. This amount will be recorded as a profit.

Where is the difference? One is gradual, and one is sudden. Surely if facilities are in use and are creating salable goods which are to be sold for a profit, the normal depreciation thereon should be reflected in operations just as much as in the outright sale of the same facilities.

Whether such adjustment as may be necessary should go the full way in reflecting current costs of replacement of facilities is not argued in this paper, but it is a factor to be considered. This feature is given thorough treatment by W. A. Paton in the *Journal of Accountancy*, March, 1946, in an article titled "Cost and Value in Accounting."

It is also not the intention of this paper to comment on accounting entries necessary to record such adjustments, but rather to examine the principles involved in the several problems in which fully amortized emergency facilities and fully or exces-

sively depreciated regular facilities may be an issue.

As a basis for an organized consideration of this problem, a separate examination of each of the following applications is suggested:

Income Tax
Corporate
Cost Accounting

It is not intended that the following treatment of each application will be exhaustive, but rather broad enough to cover the general principles involved.

TAX APPLICATION

So far as fully amortized emergency facilities are concerned, there is nothing that can be done to restate or reconsider this situation for income tax purposes. Some of these facilities may be creating taxable income in the future, but taxwise no further amortization or depreciation deductions will be allowed to the original owners of these facilities, who have elected the full amortization procedure. If, for other purposes, remaining useful values of fully amortized emergency facilities are restored, consideration should be given in that adjustment to the tax effect of the additional taxable earnings created by such facilities.

The tax consideration of fully depreciated regular facilities is another story—equally important, but more subtle. The continuing in use of fully or excessively depreciated property is usually the result of composite depreciation procedures, and the existence of such a condition is considered to be evidence of excessive depreciation practices. Under such conditions, penalty rates are usually applied by the Bureau of Internal Revenue, which process in effect spreads the subnormal unrecovered cost over the estimated remaining useful life. The penalty rate is one which many taxpayers have already experienced. Others who have allowed depreciable and useful facilities to become fully depreciated have yet to face the same situation.

This treatment cannot be considered unsound taxwise, in view of the laws and regulations relating to depreciation allowances. The method used may be inaccurate to some extent, but through this process recognition is given to the remaining usefulness of facilities which have been excessively or fully depreciated.

After the depreciation claimed by a taxpayer in a taxable income period has been examined and accepted by the Bureau of Internal Revenue, there is ordinarily no possibility of adjusting that amount subsequently. In respect to excessive depreciation claims, this has a peculiar angle. If such excess depreciation had been claimed in a period in which taxable income was involved, and the return had been examined and accepted, the amount of depreciation so claimed would be considered as the "allowed" depreciation for that period and could not be changed subsequently. If, however, such excess depreciation had been claimed in a period in which no taxable income was allowed, the depreciation so claimed is considered allowed under present interpretations of decisions and regulations, but under certain circumstances—too involved for comment here—may be adjusted to the amount of depreciation "allowable" for that period. The amount of depreciation considered "allowable" is the normal depreciation accrued under minimum operations.

At the present time there is a bill before Congress (H. R. 5978) which is attempting equitably to broaden the circumstances under which such an adjustment from "claimed" to "allowable" depreciation will be permitted. The bill, in effect, in-

tends to permit adjustments for excessive depreciation in the past in case such an adjustment would not affect taxable income in those prior years. This proposed procedure is another step in the recognition of the equity and reasonableness involved in adjusting prior records for excessive depreciation practices. It might be profitable for taxpayers who have this situation in their tax history to watch the progress of this bill.

CORPORATE APPLICATION

The corporate application of adjustments that would reflect material inequities in prior treatment of amortization and depreciation is not limited by the same restrictions as indicated for the tax application. Many companies already have reflected in their corporate records and published statements the adjusted unrecovered cost which they feel remains in respect to fully amortized emergency facilities which have remaining usefulness in postwar operations. Other companies are getting their records in shape to make such adjustments, and still others are just thinking about it.

It is evident from the comments on this subject in the various professional journals that there is but little uniformity of thought in regard to the treatment for such adjustments. No attempt has been made to analyze the pros and cons, but it is evident that there are sufficient pros, and their background of sound practices is such as to warrant the careful consideration of all who are interested in this subject.

Fewer companies have adjusted their corporate records to reflect the excessive practices in respect to fully depreciated regular facilities. Some companies in this position have found that they were not able to pay dividends out of current earnings because of deficits in surplus caused largely by excessive depreciation practices in the past. This condition may be reflected in a subnormal surplus and would, therefore, adversely affect a credit analysis. This condition, whether it be in regard to a subnormal surplus or to a surplus deficit can be corrected, as it has in some instances, by the restatement of the fully or excessively depreciated situation with consideration for the remaining usefulness of the facilities.

The principal controversy in this application of the problem seems to be the accounting mechanism necessary to reflect such adjustments in the corporate records. Mr. E. A. Kracke in the *Journal of Accountancy*, April, 1946, in an article on "The Surplus Debate Begets Surplages," deals specifically with surplus arising from a consideration of the remaining usefulness of fully amortized emergency facilities. Mr. Kracke makes the following statement, which may be appropriate at this point:

> There clearly, is the answer to those who with the finesse of the pettifogger seek to contrast "accepted principles of accounting" and "sound accounting" as two wholly different things; for the simple truth is that the latter is the unerring lodestone that guides the course of the former.

It would seem from a corporate standpoint that it would be the responsibility of management in its reports to stockholders to recognize the remaining usefulness of fully amortized emergency facilities and fully depreciated regular facilities, and to report on such amount of remaining usefulness as may be expected to affect the earnings in subsequent periods. To omit recognition of such facts as may be material might easily be interpreted as the withholding of essential information.

COST ACCOUNTING APPLICATION

The application to the cost accounting field of the various issues involved in fully

amortized emergency facilities and fully depreciated regular facilities requires consideration of still other factors than were at issue under the income tax and corporate accounting applications.

The following statements, repeated from the *Journal of Accountancy* for October, 1945, clearly define the accepted principles in regard to cost.

> For each accounting period there must be a determination of the amount of cost which has been absorbed in producing revenue or has otherwise expired, and also the amount of cost which is reasonably applicable to future operations. Diminutions or partial expirations of cost not subject to precise measurement must be determined largely upon the basis of business experience and expert opinion rather than by rigid formula. (American Accounting Association, "Accounting Principles.")
>
> From the strictly accounting point of view the depreciation charge against income is the element of primary importance. *It should fairly reflect the consumption or expiration of property usefulness that has taken place.*" (American Institute Bulletin No. 5.)

The emphasis supplied in the above quotation is intended to accentuate the principal point of the discussion of this paper, namely, that if facilities are being used to produce earnings, the depreciation on such facilities as a part of the cost of producing the products should fairly represent the consumption of that usefulness in the process and in the period being reported. If depreciable property, whether it be emergency facilities or regular facilities, is allowed by prior practices to become excessively or fully depreciated or amortized, present and future operating data will be distorted. If the distortion due to this feature is a material factor, it would seem incumbent upon management to make whatever adjustments are warranted by an examination of the facts. Such adjustments may or may not require corresponding adjustments to corporate accounting records, but in a cost-finding operation the true cost of producing should be the objective, and that can only be accomplished, among other features, by a consideration of the fixed charges on all facilities being used.

That industry as a whole does not know costs by products is evident from an editorial from the *Journal of Accountancy* of June, 1946, commenting on H. R. 6042. This bill provides that no maximum price shall be established or maintained below a price which will reflect to producers, etc., the sum of (1) The current cost of producing and processing and distributing such commodity as determined by the established commercial accounting practices of the industry, and (2) A reasonable profit thereon.

The editorial cites further the widespread lack of accurate cost accounting data by products, and states:

> It is difficult to see how multi-product companies can set their own prices intelligently without precise information as to the cost of each product. It is well understood that prices are not necessarily fixed directly on the basis of costs, but cost must be at least one factor in determining long range price policies.

It would seem from a consideration of these well-qualified comments that there will be a trend towards more accurate cost accounting for products. It would further seem that, as an essential part of this more accurate cost accounting process, consideration should be given to the remaining usefulness of fully amortized or depreciated facilities. Whether the results of such a complete cost accounting process should be applied to over-all, long-range pricing policies, applications for price increases, wage disputes, etc., does not seem to be pertinent. The principal objective use of such data should be the determination of current costs of products as accurately as possible; and if fully amortized emergency facilities or fully depreciated regular facilities are used in the manufacture of such products, their fixed

charges, including normal depreciation, should be considered as much a part of the cost of operation as they would have been had the facilities not been fully amortized or fully depreciated through prior practices. It would then be the responsibility of management to use such data or not in the various applications as cited.

SOLUTION

It appears that these problems can be solved only by an examination of the facts regarding the existence and use of the property in question. A few comments on the procedure for collecting and analyzing those facts therefore seems in order. No detailed specifications can be established for such a procedure which will fit every case in which fully amortized emergency facilities or fully depreciated regular facilities are an issue. Some general guides, however, might be stated.

As a first step, it would seem essential to inventory all the facilities in use, and, in so doing, verify the existence and use of property represented by the amounts shown as being fully amortized or fully depreciated. Simultaneous with this inventory and verification process, the estimated remaining useful life of each unit should be established, giving consideration to all pertinent facts including an examination of existing and prospective obsolescence. Retirements not previously reported would also be disclosed by this inventory and verification process.

This first phase of the study will require a thorough consideration of such features as excessive use during the war period, abuse by an inexperienced operator, deferred maintenance, effect of more modern emergency facilities on the use and possible replacement of older regular facilities, inability to make necessary replacements during the war period, use in postwar period by more experienced operators and possibly for entirely different uses, etc. Many of these features may not be subject to precise determination; but a thorough attempt should be made to collect and consider all such data. If the property records are set up in a flexible form, adjustments can be made in later periods if any of the basic premises are found to be at variance with subsequent events or experience.

The form which such property inventory records should take is an immaterial factor at the moment. There are many forms which are suitable for specific applications.

Once this inventory is established, consideration should then be given to the basis upon which normal depreciation is to be computed. If it is decided to use original costs as the basis, then it would seem advisable to give consideration to the elimination of any excess costs of a material character which were due to wartime expedients. Such excess costs fall naturally into two categories: (1) abnormal costs paid because of wartime necessity or expedients, and (2) costs of facilities the capacity for which is greater than is reasonably required for postwar operations. If either of these two categories of excess costs represents a material factor in the entire picture, it would seem advisable to take them into consideration in determining an adjusted depreciation base.

Consideration should also be given at this point to the merits of using in lieu of, or in addition to, original costs a basis more in line with current costs of replacements of such manufacturing facilities. The article by W. A. Paton, previously referred to, treats this phase of the subject.

With the foregoing studies completed, all the data necessary to determine the reasonable normal depreciation on all facilities in use will be available. It may be advisable, as it has been in many cases, to combine such cost accounting and corporate data with the income tax data, using the same set of property records in

respect to inventory of facilities and remaining life data, but with different cost bases. Such a segregation of depreciation data should permit the proper accounting for tax depreciation as separate from that used for cost-finding purposes.

With these data available, and in proper form for convenient summarization and use, accountants will have in their hands the necessary tools with which to report to management a truer picture of plant properties as they are being used to produce earnings, and to arrive at the maximum provable depreciation for tax purposes.

CORRESPONDENCE COURSES IN THE ACCOUNTING EDUCATION PROGRAM

STEPHEN GILMAN

THERE ARE many differences of opinion as to the merits and demerits of correspondence instruction.

Most of these differences seem due to misunderstandings, since few will quarrel with the avowed purpose of such training, which is that of bringing the school to the student as contrasted with the reverse process of bringing the student to the school.

Some of the misunderstandings respecting the correspondence method can probably be traced to (1) failure to distinguish between ethical correspondence schools and others, (2) confusion of the method of reciting with the method of instruction, and (3) ignorance of the types of men and women who enroll for correspondence training.

This third point, which refers to the average student, is in reality the key to any understanding of the modern correspondence school.

It may not come as a surprise to you to learn that this student is a married man and that he is employed. It may not surprise you to learn that he often resides in a small or medium-sized community. But I do think it may interest you to learn that this average student is over thirty years of age. This age statistic represents the controlling factor which accounts for most of the merits and demerits of correspondence instruction.

Until it is fully realized that correspondence training is definitely *adult* education, it is impossible to evaluate the modern correspondence school.

Each and every topic to be touched upon in the following half hour must be interpreted in the light of an individual (1) married, (2) holding a job, and (3) over thirty years of age.

With this age factor properly emphasized, we may continue to discuss our topic in terms of (1) types of institutions furnishing correspondence instruction, (2) types of correspondence training, and (3) advantages and disadvantages inherent in the correspondence method, and close with a consideration of the controversial problem of education for public accounting.

TYPES OF INSTITUTIONS FURNISHING CORRESPONDENCE INSTRUCTION

A number of universities and colleges either have furnished or are still furnishing correspondence instruction. Columbia University sponsored a great number of correspondence courses during some ten or twelve years. That Columbia later discontinued such activities can be ascribed to a variety of causes, not the least of

which was the lack of "know how" in this highly specialized form of teaching.

When President Harper came to Chicago University he brought with him a knowledge of correspondence instruction from his previous Chautauqua connections. It is understood that Chicago is still administering numerous correspondence courses.

Other universities and colleges have experimented more or less successfully with the correspondence school idea. As we shall see later, Queens University and the University of Toronto, both in Canada, are the principal agents for preparing candidates to become members of two professional accounting institutes, and this preparation is by correspondence.

United States governmental units have written and promoted correspondence courses, the most notable being the Armed Forces Institute, which administered about 200 different kinds of courses to something over 1,370,000 G.I.'s.

Some industrial companies have experimented slightly with the preparation of correspondence courses. One office equipment company, for example, prepared a course to teach dealers how to plan office space for prospective customers.

The largest classification is that of the private correspondence school. Commonly, it solicits prospective students by magazine advertising, through the mails, or by personal salesmanship. It prepares and furnishes text material, examination material, and often issues diplomas for satisfactory completion of courses. It deals with each student as an individual, not as a member of a group.

TYPES OF CORRESPONDENCE TRAINING

Competition between certain schools has unquestionably been responsible for many effective specialized teaching techniques. It should be noted, however, that there are substantial differences existing between methods used by other schools.

For example, the word "course" has been employed with so little discrimination as to rob it of real meaning. An ordinary book or series of pamphlets may be called a "course," in spite of the fact that it serves no educational function other than that served by any reading material. A true correspondence course may employ bound books, or it may not, but it always calls for substantial student response, usually by means of questions and problems which the student is required to submit for grading.

Another method of classifying correspondence schools is according to subjects and their appropriateness in relation to the teaching method. Some subjects do not lend themselves to correspondence teaching. As extravagant but obvious examples we mention swimming, tennis, or golf.

Correspondence instruction at its highest level is found in connection with subjects which are related to writing. Thus, mechanical drawing, shorthand, or fiction writing *could* be appropriately taught by correspondence. Perhaps the most outstanding example of an appropriate subject for correspondence instruction is accounting, since accounting is always expressed in writing and, it has been said, can be learned "only through the point of a pencil."

ADVANTAGES AND DISADVANTAGES OF THE CORRESPONDENCE METHOD

Some people criticize the correspondence method on the following alleged grounds:

(1) Few correspondence school students ever graduate and, if many did, the schools would "go broke."
(2) Correspondence school curriculums are too narrow.
(3) Correspondence schools have no adequate entrance requirements to screen out the unfit.
(4) Correspondence schools do not provide for personal contact with students.

(5) Correspondence school grades and diplomas are meaningless because of lack of control over "cribbing."

Most of these opinions result from misapplying certain classroom standards to a radically different educational pattern.

Where there is some element of truth in any of these criticisms, it is a natural consequence of training the mature as against the immature, the part-time as against the full-time student, and the self-supporting as against those still sheltered under the parental, or perhaps governmental, financial wing.

However, let us examine each of these opinions briefly.

Let us speak first of "graduation." It is commonly said that the correspondence school student does not study as determinedly as the younger man in the classroom. In fact, it has been said that if all correspondence school students *did* study all of the educational fare set before them the schools themselves would probably go broke.

The truth of the matter is that the worthy correspondence school makes considerably more money if its students do study than if they don't, and that every such school is eagerly striving for ways and means by which more students can be induced to study more lessons. This is because the school invests a substantial sum of money in each student. Such investment is an actual out-of-pocket cost which is not recoverable from monthly tuition payments except over a period of months. Since, with few exceptions, a student is willing to pay only if he studies, it is clearly to the school's advantage to encourage students' progress.

Be all that as it may, however, it must be admitted that if it were possible to compile accurate completion records for the correspondence school they might not compare favorably with those of the resident class unless that resident class caters to employed adults.

Here we find the key to this matter of completion, it being generally recognized that a somewhat heavier mortality characterizes *all* forms of adult education.

However, it is seldom possible to prepare informative completion records. The adult correspondence student starts, stops, and starts his studies in a most erratic manner, sometimes with inactive intervals of months or even years. A salary increase or a change of job may cause him to cease studying. An increase in his family responsibilities or the possibility of a promotion will start him again. Since the over-all time limit imposed by any school is extremely generous, it is seldom possible to transfer a student's educational records to an inactive file for years after his enrollment.

Also, comparisons referring to "graduation" are invalid. Graduation in the modern correspondence school serves just about as useful a purpose as the appendix in the human body.

There is always a modest percentage of students who are diploma hunters. For this minority the school may provide an appropriately engraved wall decoration. Usually, however, these are the younger students. The adult subscriber attaches little or no importance to such documentary evidence of study prowess, and in the case of our own subscribers most of them are not willing to spend half a day writing a final examination under personal supervision merely for the sake of getting an engraved testimonial.

The root of the completion problem, therefore, seems to lie in the fact that most correspondence school students are adults who want a certain kind of training and accept only as much thereof as they require, with little or no incentive to strive for complete grade records or graduation honors.

Correspondence schools have been criticized for the narrowness of their educational offers. In admitting some justice to this complaint, it should be noted again

that the narrowness of the offering is traceable to the fact that the school is serving adults who know, or think they know, exactly what they want. Practically all of them are at least high school graduates and a heavy percentage of them have attended, if not completed, college. They will not tolerate courses in so-called cultural subjects. Either they have had such courses, or they have a specific need for technical training which they do not wish to have alloyed. Probably the quickest way for a correspondence school to destroy itself would be to impose a curriculum of unwanted subjects as a prerequisite to accounting study.

If, however, CPA examiners could or would require noncollegiate candidates to show evidence of having pursued a broadened curriculum, the correspondence schools would have the official authority to justify a stiffening of their coaching requirements.

Even without such backing from the examiners, we can and do require completion of an extra heavy technical curriculum before any of our full-course students is allowed to study CPA Coaching. In addition, although we cannot require students to take courses in composition and grammar, we can require them to pass a special examination in these subjects prior to their study of CPA Coaching, this innovation being now in process of installation.

One rather unjustified criticism of the correspondence school asserts lack of discrimination in its enrollment procedure. While this may or may not be true in connection with some non-accounting courses, the enlightened accounting school manager knows that his livelihood depends upon enrolling only those who are properly fitted for technical study.

Though numerous other screening devices are in use, it is probable that the personal interview is the most effective. It is particularly effective when the school's representative is not only a salesman but an experienced vocational guide. It is doubly effective when his compensation is largely dependent upon the successful progress of the students he enrolls. This comment leads us into a consideration of another important function of field representation.

Some persons have pointed to the lack of personal contact which they believe to be inherent in correspondence instruction. As a matter of fact, continuing personal contact is characteristic of many well-organized schools. This personal contact is maintained through district offices scattered throughout the United States. The man in charge of each such district office is often an independent contractor who "owns" his territory and who must live amicably with his student body.

While he is a salesman, he is much more than a salesman. While he is often trained in accounting, he is much more than an accountant. Often he has had years of experience in dealing with the educational problems of men and women and therefore qualifies as a wise counselor.

It is interesting to note, in so far as our own school is concerned, that about six out of every ten enrollments are taken by representatives with over five years of experience, and that most of the remainder are taken under the direct supervision of these same experienced men. They not only enroll students but they help them with their personal and business problems and assist them in getting employment or promotions. And they do all these things not only from ethical considerations but because they know that friendly students help influence others to enroll.

It has sometimes been suggested that the educational records of a correspondence school are not reliable because of lack of control over cribbing. This criticism is practically without merit, as will be rather obvious when we remember that the typical student is over thirty years of age,

married, and employed, and that he is not investing his own money for vocational training and then destroying that investment by cribbing.

Cases of one correspondence school student copying another's work are practically unknown except in a few isolated instances where a salary raise is the promised reward for a completed course. Even such isolated cases can be kept under control, however, by providing a final examination to be administered locally under effective personal supervision.

To offset any real or imagined inadequacies of the correspondence method there are certain positive advantages, as follows:

(1) The instruction is purely individual, as a result of which the student can set his own pace to harmonize with his own business and personal requirements.

(2) Since cribbing is practically unknown, good examination problems can be retained in use and redesigned and refined from time to time as experience dictates, thus providing laboratory materials of tested value.

(3) Because the cost of its text can be spread so thinly over the student body, the correspondence school can do an elaborate and expensive job of text preparation. By the same token it is feasible to make frequent revisions to (a) iron out discrepancies, (b) clarify obscure points as indicated by analyses of students' errors, and (c) keep instructional materials up to date.

(4) The cost of correspondence training is comparatively low. Even the most enthusiastic proponent of compulsory college training would hesitate to maintain that it is twenty times as good as correspondence training, although that figure does represent the approximate cost difference.

(5) The correspondence method provides an excellent educational balance between accounting study and practice. The student employed in an office does his practical laboratory work by day and his studying by night.

CORRESPONDENCE TRAINING FOR CPA EXAMINATIONS

Some of the matters we have just been discussing are important in their own right; some of them are particularly important in connection with the next phase of our discussion, namely, the relationship of correspondence training to the CPA certificate.

Three questions here present themselves:

(1) Can the correspondence method equip candidates for the CPA examination?
(2) Can the universities and colleges now undertake the sole responsibility for professional accounting preparation?
(3) Would wide adoption of the collegiate requirement add to the strength of those now seeking to relax the educational and experience standards of state CPA laws?

As to the first question, we have some evidence bearing on this point from Canada and from England, as well as from the United States.

The two principal certificates issued by accounting institutes in Canada are those of Certified Public Accountant and Chartered Accountant.

Preparation for the examinations leading toward the certificate of Certified Public Accountant involves study of a correspondence course in accounting administered by the University of Toronto. The course consists of 122 lesson examinations plus text books at an over-all cost of approximately $335.

Preparation for the examinations leading to a certificate of Chartered Accountant is through a correspondence course administered by Queens University. The course consists of 130 examinations plus lessons and text books at an approximate cost of $350. A modification of the apprentice system is in use, thus providing a desirable combination of theoretical and practical training, all of which is supple-

mented by the activities of the student societies.

In Great Britain there are various accountancy institutes. The three principal ones are (1) The Institute of Chartered Accountants in England and Wales, (2) The Societies of Chartered Accountants of Scotland, and (3) The Institute of Chartered Accountants in Ireland. Not less than 75 per cent of candidates for admission to these institutes study private correspondence courses. Residence school training is never insisted upon and rarely used. A five-year apprentice system is in vogue. University graduates are entitled to a reduction in such articled service of either one or two years, but the number of such university graduates is small, representing approximately but 3 per cent of the total.[1]

In the United States most of the CPA laws have permitted the candidate to obtain his technical knowledge by any method he desired. He could use the universities, business colleges, night schools, correspondence schools, his local public library, or any combination thereof. Many have selected correspondence instruction, as is evidenced by published claims of leading schools to the effect that more than 30 per cent of all certified public accountants received some or all of their training by correspondence. No one, so far as is known, is now making odious comparisons between these men and those with college backgrounds.

Some years ago in New York, however, the Board of Regents promoted the first collegiate requirement. It was said at that time that if public accounting was a profession its educational requirements should be on a par with those of the other professions, notably those of law and medicine. Because of reciprocal necessities and also because of the "convincing" analogy between law and medicine on the one hand and accounting on the other, attempts have been made to legislate a collegiate requirement in other states. These attempts have not yet been notably successful, despite which it should be observed that in almost every one of our states there exists a group dedicated to the ideal of the collegiate requirement.

Other less extreme groups favor special concessions to college men. The "model" bill of the American Institute is probably representative of this viewpoint. I quote: "... the candidate who was a college graduate with an accounting major would be required to have had only two years' public accounting experience; the college graduate without an accounting major would be required to have three years' public accounting experience; and the high-school graduate, six years' public accounting experience." (Editorial in the *Journal of Accountancy*, September, 1945.)

Now presents itself this query: Would wide adoption of the strict or the modified collegiate requirement be politically unwise? The answer seems to be "yes," if we accept the views which follow.

NUMERICAL SUPERIORITY OF UNCERTIFIED ACCOUNTANTS

It has been said that the CPA certificate is in danger. Why is it in danger?

To a considerable extent it is in danger only because of one false element in the professional analogy mentioned.

How does the analogy between the professions fall down? It falls down because neither in medicine nor in law does there exist a substantial body of doctors or lawyers not practicing professionally and hence not licensed. In accounting, on the other hand, there are for every one certi-

[1] This figure may be increased somewhat as the result of a new plan whereby a university degree and a professional accountancy qualification will be obtainable through a 5¼ year program.

fied public accountant literally hundreds of other people who are, or believe themselves to be, accountants—some in public practice without the CPA certificate and many, many more in private or governmental employment. Probably the majority of them never went to college, but these many men have votes. Many votes mean legislative influence.

A comparable situation does not exist in the other professions.

The noncertified man may even be a chief accountant or a controller with no intention of ever practicing professionally, but he doesn't want to be irrevocably denied an opportunity to do so.

The history of our CPA examinations has long been a history of griping and complaint on the part of those who failed or who could not or would not qualify. What the CPA refers to as "raising professional standards" is more often referred to by the noncertified accountant as "trade unionism."

He is not convinced that four years in college is in any way equivalent to two, three, or four years of practical accounting experience. If anything, he thinks that the college graduate really needs *more* such experience than the chap who spent the same four years in a bookkeeping job. He looks upon university training as a privilege conferred by mere accident of birth and resents as undemocratic the apparent favoritism implied by many CPA laws.

He is not convinced that employment in a public accountant's office is the only way to gain experience. He looks upon this requirement as monopolistic or as a cheap recruiting scheme to get juniors.

The hitherto faintly hostile attitude of the noncertified accountant is in process of developing into open revolt. Part of this revolt is an aftermath of the war; part of it is due to the poorest sort of public relations practiced by state societies of accountants; part of it is due to little more than plain envy.

VULNERABILITY OF STATE-GRANTED CPA CERTIFICATES

It is said that those who dwell in the shadow of Vesuvius are somewhat contemptuous of that volcano's eternal threat. No less insensitive has been the attitude of many certified public accountants toward the danger involved in a state-granted license.

Obviously, what the state can grant the state can take away!

Look over the average state legislature in this country of ours and see how many members are qualified to exercise good judgment respecting professional accounting matters. By and large, the members of such state legislatures are not sympathetic toward accounting; they are not informed respecting accounting; and, most serious of all, they are extremely susceptible to pressure groups.

Some accountants are far from blind to the dangers which menace the CPA certificate. How many of you have read recent reports of the Committee on State Legislation of the American Institute of Accountants? As of October 10, 1945, that committee said: " . . . there will be serious danger of permanently impairing the standard of the CPA certificate which has been so laboriously built up in the past 50 years."

As of May 1, 1946, the committee said: "Veterans, noncertified accountants in the private, public, municipal, and governmental fields will strive for legislation that will grant to their groups the CPA certificate through modification of education or experience requirements and, in some cases they will undoubtedly demand outright waiver of the CPA examination."

Are these mere expressions of trepidation? Look at the recent records in the states of Texas and California. As of July 31, 1946, under the terms of the new Texas regulatory bill, 4,500 applications for licenses were filed. Of that number over 3,000 have been approved. Contrast those

two figures with the number of Texas CPA's, which included inactive members and holders of reciprocal certificates, amounting to some 900.

Under the provisions of the new California regulatory act, 12,600 applications were filed. From this number over 4,000 public accounting licenses have been granted. Compare these figures with the number of California CPA certificates of 1,623 (many of which are held by nonpracticing accountants).

Which group—the CPA's or the registered accountants—will be heard most respectfully by the legislatures of Texas and California? And how about the large numbers who were denied registration? Won't they have something to say to their legislators? What a Pandora's box we have opened!

But Pandora still had hope left. Perhaps we have, too. A stern facing of facts and the adoption of certain remedial measures may still save the day. This means that something must be done to justify present-day professional standards of education and experience or change such standards in a manner which will appeal to all noncertified accountants as being reasonable.

Let us here take note that it makes no difference whether the standards actually *are* reasonable. The all-important question is: Do they *seem* reasonable to those noncertified hordes who will high-pressure our state legislatures?

Nothing but disaster can result if the certified group talks grandly of educational and experience standards and the noncertified group talks sourly of monopoly.

CONCLUSION

Experience requirements *can* be liberalized to include adequate experience in private employment without serious danger and at the same time break down the "slave labor" argument of the noncertified group.

From the educational side we can well afford to recognize that there is not merely one road to an accounting education but that there are many roads, and that in the final analysis the method by which an education is achieved is not nearly so important as the fact of its achievement.

The present Illinois CPA law has gone a long way in this connection by recognizing certain correspondence schools and by devising a formula for translating correspondence study into semester-hour equivalents.

The difficulty of such translation is obvious. In the classroom, because elapsed time and student progress are correlated, it is customary to express a student's accomplishment in terms of semester-hours. No such measure is applicable to the correspondence method, which necessarily disregards the time element and expresses results only in terms of completed units.

There seem to be only two solutions to this problem. The first, or formula method, is the one used by the Committee on Accountancy of the University of Illinois. The second is that of an equivalency certificate, somewhat similar to the one now issued under sponsorship of the American Council on Education (*Time*, July 29, 1946.)

For years the Committee on Education of the American Institute of Accountants and similar committees of other accounting societies have studiously avoided the correspondence school problem in spite of its obvious importance. Such committees could perform a real service by sponsoring a preliminary equivalence examination the passing of which would equitably reduce the experience requirement of the non-college man. Should such a man fail that examination or refuse to take it, he would still have the option of qualifying under the maximum experience requirement, as before.

The accounting schools should welcome this plan since it will give them backing in their attempts to widen their curriculums.

The requirements of such an examination, if moderate, will be recognized as fair by the man who, for financial or family reasons, has been denied the luxury of a four-year college course but who has acquired a good education otherwise. The justifiable shortening of his apprenticeship period is, of course, the essence of the proposal. Without that there will still be muttering and grumbling in the rear ranks and the threat to the CPA will still remain.

Following the adoption of some reasonable plan for measuring educational equivalence, the correspondence method can take its proper and very important place in the accounting education program.

GUIDANCE TESTS FOR ACCOUNTING STUDENTS

A. C. Littleton

A committee on selection of personnel was established by the American Institute of Accountants in 1943 to study ways and means of insuring a continuing influx of capable people into the profession. Obviously, vocational counseling would sooner or later be involved. If counseling could avoid some of the heartbreaking experiences often met in fumbling and stumbling into one's life work, it would surely be worth while to the individual, and no less to the profession. It is clear, too, that counseling could work best if it rested on factual evidence regarding the individual's capability and promise. To furnish some evidence of this kind, tests would be needed that would be revealing, that could be easily administered, and that might be so widely used as to furnish national norms as a standard of comparison.

It is quite understandable, therefore, that the committee's present project should have three purposes.

1. "To define the mental and personal qualities which make for success in professional accounting."

This objective will not need to be considered here, since recent articles in accounting periodicals have presented a number of inventories of the qualities that seem desirable in professional accountants.[1]

2. "To develop, in collaboration with educational institutions, a procedure whereby promising young men may be discovered and guided toward the profession and their progress appraised at regular intervals."

This objective is the one I will emphasize here, especially the part the colleges of commerce should play. But I want to put off that topic for a few pages in order to present the third objective of the Institute's committee, because the third item indicates the principal avenue of collaboration.

3. "To establish a battery of tests and supplementary techniques for use in evaluating the qualities which are important for professional accountants."

---

[1] "Qualifications for a Professional Career," Edward B. Wilcox, Accounting Review, January, 1944; "Occupational Levels in Public Accounting," A. C. Littleton, *Journal of Accountancy*, December, 1944; "The Development of Aptitude Tests for Accountants," John L. Carey, Accounting Review, January, 1945; "Public Accounting as a Career," a pamphlet reprinted in the *Journal of Accountancy*, April, 1946. Miscellaneous comment, "Accounting Exchange Department," Accounting Review, April, 1943, July, 1943, January, 1944, July, 1945.

The American Institute has already provided one simple means by which all schools can begin this much desired collaboration. A pamphlet has been prepared with the title "Public Accounting as a Career." I hope that accounting teachers will get this booklet into the hands of as many of their better students as they can. For it is a restrained, factual statement of the work of the professional accountant and of the essential qualities of the practitioner, and not at all a propaganda blurb.

The other means of collaboration are more elaborate—the use of so-called aptitude tests. Some of these will be ready for regular use in the fall term; others may be delayed some months longer.

Preparing a battery of testing materials is a task for technicians skilled in that particular field. The Institute is fortunate in having secured Dr. Ben D. Wood of Columbia University as project director. He has gathered a staff of technicians and consultants around him whose work to date gives high promise of creating testing procedures likely to produce very significant results when in full use.

There are two stages in the development of tests of this kind. First, that of devising tentative questions and factual situations, subjecting these to various validating experiments to reveal their suitability, and revising the tests if that seems advisable. Second, that of establishing statistical norms from standardized tests used nationally, to the end that there may be a national standard of comparison for the test scores of individuals or groups. The first of the two stages was completed in the summer of 1946 for several parts of the proposed testing program.

Most progress has been made in that part of the program dealing with:

1. An Inventory of Vocational Interests.

This is a rather brief test so far as time goes (it takes possibly forty-five minutes), but it is very revealing since it produces a pattern of the individual's likes and dislikes. No preliminary experimenting was necessary in this connection, for the "Strong Vocational Interest Test" has had many years of use to prove its validity. Therefore, the committee's project director could proceed at once to establish national norms for the pattern of likes and dislikes that is characteristic of accountants. Up to the present time 2,100 tests for members of the Institute or staff members of firms have been scored and analyzed. The interest-pattern of a good cross section of the profession is therefore known.

Accountants as a group are clearly interested in certain kinds of things; in other things they are definitely uninterested. Both phases are characteristic. From the reactions of a large number of accountants there emerges a statistical blueprint of the group. A similar statistical picture of an individual's interests, when superimposed on the normal pattern of the mass, can therefore give some indication whether he is likely to be happy in an accounting career.

No one should expect in this test a sure sign of possible future success, for success depends on many factors besides interest. Yet anyone who is definitely interested in the things that interest others in a certain line of work surely will have a clear advantage (other elements being equal) over someone who lacks that interest. For the former is likely to apply more effectively whatever talent and knowledge he may have.

Since the preparatory work is complete for interest tests, these will soon be available to the schools and firms upon request and at small cost.

The second part of the testing program deals with:

2. General Mental Fitness

This test will require one class period or equivalent time, say 50 minutes of writing

time plus 10 minutes for instructions. It seeks clues to another important question: namely, How well are the mental qualities of the individual oriented to the work of an accountant?

This part of the examination puts the applicant to test regarding "linguistic ability." It does not deal, as might be supposed, with foreign languages or extemporaneous speaking, but rather with simple word-power and comprehension—with the ability to differentiate meanings, to call up useful associated ideas. It also puts him to test regarding "quantitative ability." This is not so much speed arithmetic as power to perceive interconnection of ideas and relationships that are expressed in numbers.

Everyone whose work is above a purely routine level needs some linguistic ability and some quantitative ability. And tests of this sort therefore have a broad and general usefulness. But for prospective accountants they have special significance when cast in forms clearly relevant to an accountant's life and work.

The accountant needs some linguistic ability because often he must follow fairly complex discussions intelligently, and because he must forcefully clothe his ideas in words to reach another's understanding. Yet verbal language is not the accountant's medium of expression in the sense that it is for the poet or novelist. His medium is figures rather than words. More than that, figures constitute the principal material he must work with before he undertakes to convey his ideas to other people. Hence for the accountant figures are both a material to be understood and a medium for bringing understanding to others. Most of his energies, in study and in practice, are devoted to penetrating the meaning embedded in an organized mass of figures, and in translating that meaning to others' minds through compactly rearranged masses of figures. That is why a purely theoretical study of accounting ideas cannot alone constitute accounting education. Incidentally, that is also the reason why economic statistics and investment analysis are such good collateral studies for accounting students.

A good deal of planning throughout the whole educational system is directed toward developing verbal and quantitative abilities in the students. And since the cumulative benefit to the student is measurable, it should be assessed both for his own use, for the school, and for the subsequent employer.

The preliminary experimental work in validating the tentative tests in this area of the project was completed in the spring and summer of 1946 with the cooperation of several universities. Revision will soon produce standard testing materials for use this fall in schools and offices.

It will be clear, I think, that the schools can use these materials to advantage. As an aid in counseling they should be distinctly worth while. Students would benefit in that they would be helped to fit in better; and the schools should benefit from the students' improvement. Most students entering college are undecided regarding their future career. Hence most schools of business stress instruction in widely useful general business subjects and give relatively less emphasis to specialization. These tests of mental qualities should be useful in helping students to an early choice among whatever fields of study the college of commerce may offer.

But this benefit may not be without its price in administrative difficulties to overcome. The class periods needed may present a problem for some of the advanced or achievement tests. Perhaps equivalent time in larger groups outside of class could be substituted. But even that raises questions. Would voluntary attendance introduce a bias into the sample by failing to reveal the adequacies or inadequacies in

ability of the absentees? If accounting orientation tests are required of all students, would conflicts develop from other departments' wanting their own testing programs? Would required attendance for the orientation tests be criticized as duplicating that for existing testing programs, such as freshmen placement tests?

No doubt these difficulties will prove to be quite imaginary in most situations, or they will disappear after reasonable local adjustments. For example, in a school that is already administering an orientation (general ability) test affording separate linguistic and quantitative measures, the accounting orientation test need be used only to the extent necessary to establish comparability between the two tests. At least the program deserves a widespread and thorough trial in the colleges of commerce. It is clear that the profession would stand to benefit if this pre-professional screening became a general practice. But it should be equally clear that the schools also stand to benefit in the long run, as their carefully screened and thoroughly taught students build up the schools' reputation among employers.

The Institute's project for selection of personnel will touch accountancy itself in a series of "achievement tests," some of which will be available at cost to schools and public accountants.

These tests are designed for use at three levels.

I. At the end of the student's first year of the study of accountancy.

Using accounting subject matter and standardized, objective, multiple-choice questions, Level I achievement test will enable the student to demonstrate his grasp of fundamental accounting ideas. The time necessary for writing the test probably will be approximately 180 minutes. For convenience of administration, selections of the material will be prepared in separate booklets of a length suitable for the typical classroom period of forty-five or fifty minutes.

II. (a) At the end of the major sequence in accounting, that is, at or near the time of graduation of college seniors with a major in accounting. (b) At the time of employment on the staff of a public accountant.

The material in the Level II achievement test is more advanced and professional in character than that in the test at Level I and will require more time to write, possibly 240 minutes. But it, like the Level I test, will be available in sectional booklets and will use multiple-choice questions rather than the CPA type of problems.

For both these achievement tests, national norms will eventually be determined for use as a bench mark in gauging the scores made by individuals or groups. Norms for Level II tests will be separately established for college seniors, junior staff assistants, semi-senior assistants, and senior accountants.

III. At the expiration of about four years on the staff of a public accountant.

The Level III achievement test is planned to be used at about the time the staff man should be ready for the CPA examination. It is not yet in preparation and will not normally be considered useful to the colleges. However, some schools may be asked to cooperate as examination centers for applicants in their neighborhood.

This examination technique may prove so fruitful and dependable that its use may in time be greatly expanded. The type of test contemplated in III above might become a reliable pre-examination indicator that the applicant was ready to sit in the CPA examination with a reasonable expectation of success. It might conceivably become a voluntary adjunct to the usual state CPA examination. With this status it could become an accepted part of the Institute's service to state

boards of examiners, being offered to candidates who elect its use on an extra day before or after the regular examination. The candidate's score would be significant collateral data for the board, the employer, and the person himself. Possibly it might gradually evolve to the point where it could be adopted by state boards as part of their admission rules, in somewhat the same way that technical education is now gradually becoming part of the admission rules.

The wide use of these national vocational tests, besides providing directly useful data to applicant and employer, could become a means of drawing the schools and the profession toward improved mutual understanding. In the profession there are pressing problems involving recruiting of competent personnel, raising standards of professional service to the public, securing public recognition of the professional aspects of public accounting. In the colleges of commerce there is the ever-present problem of adequately preparing students for careers which the students themselves have not yet chosen.

Public accounting is not so well known that, as with medicine and law, students will make an early choice of that field for their career. Since our students are undecided, it is part of our logical function impartially to help students make a decision. This testing service could be of considerable service here.

But the profession must take the lead in selling itself to the public for service and to prospective employees for careers—and then make good on both counts. The profession cannot expect all the best students to be channeled in one direction; and it should not expect all who major in accounting to be aiming at public practice. Many students plan to enter private accounting, and many others recognize accounting courses as providing good education for the managerial positions in business they are aiming at.

And I predict that the realization will grow that the study of accounting can prove highly useful in the education of lawyers and economists, among others. It would speed the day of this realization if accounting teachers would give effect, in concrete ways, to the fact that for mature students in fields like law and economics whose study of accounting is at best a minor matter, the usual slow approach to accounting through bookkeeping techniques is entirely inappropriate.

But the schoolmen's dilemmas are not ended when students choose to major in accounting. There is a duty running both to the individual and to the profession of educating these accounting majors broadly rather than narrowly. It is a major educational problem—and professional men should lend a hand in the solution—to unite satisfactorily a suitable general education and a suitable technical education. A good many, perhaps most, university departments are under criticism these days as fostering a program which is suitable only for a person who has chosen that particular field as his particular specialization. This being the case, men in the profession should not expect too much specialization in the colleges. But I think they would be wise to ask that their recruits should have had some instruction in accounting.

These vocational tests may not be of much help to this school problem of how much specialization is too much. But when ample data accumulate from the results of the tests it should be somewhat easier to see how to improve the quality of whatever amount of technical education is decided upon.

Data from these tests can be expected to help the profession in making some of its choices as well as the schoolmen in making theirs. Educational alternatives already are under consideration.

The profession may ultimately choose to

fill most of its staff needs by using people with a good deal of general education, expecting technical education to be accumulated in the field and privately outside of office hours. Some people are now inclined to think highly of this approach.

The profession may ultimately choose to lend organized support to the idea of purely professional accounting schools. These might rest on a base of four years or two years or no years of general college education, and may include little or no adequate contact with subject matter that is often considered closely allied to accountancy, such as economics, finance, management, and business law.

Or the profession may come to a middle-of-the-road conclusion that the best is a combined program that thoroughly mixes throughout four college years general education, commercial education, and accounting education.

All these programs will be tried. Differing philosophies of education will be in competition. Each school and each graduate will be convinced his way is the best. How can sound conclusions be reached? Shall dependence be given to personal reactions or shall factual aids be called upon to help produce a good long-range judgment of the alternative?

It is here that the accumulating data from these vocational tests may prove unexpectedly helpful. Already available are published curricula reflecting differing educational policies; and there are the transcripts of individual records reflecting a single person's program content and college grades. These data alone are hardly a satisfactory gauge of either the individual or the school. The test scores, by individuals and by schools, would add significantly to the means of judging both.

When all accumulated data have been studied in connection with a sound plan for a graded rating of professional success, it might ultimately appear that the future of an individual was reasonably well foreshadowed by (1) educational content, (2) scholarship standing in college, (3) vocational test results, when this evidence was interpretatively combined with an adequate appraisal of personality factors. The present project does not include proposals for testing personality. But this could reasonably be added later.

Professional accountants have contributed nearly $60,000 toward the cost of developing this long-term project. The present tests are only the beginning; they will be altered and extended as the results in use suggest. There is no thought that this testing program might be a substitute for existing evaluative instruments and procedures. They should only be considered as supplements. In fact, a subcommittee is working toward a cumulative record form to facilitate bringing together in one view all the data on each student or employee from all sources for all the years the individual has been in school or employed. Being a sort of "personal balance sheet" of abilities, interests, training, achievement, and experiences, such a summary should have many uses.

Professional accountants stand ready in large numbers to take the tests themselves to help in developing norms. And I feel sure that the universities will join in making this a fully cooperative enterprise and thus have a substantial part in producing a successful outcome.

CORRELATION OF COSTS TO FINANCIAL STATEMENTS*

B. G. APPLEBY

IN MAKING an approach to the problems connected with the correlation of costs to financial statements, it might be pertinent to give some thought to the evolution which has occurred, over the course of many years, in the concept of the principal function of accounting.

It has been said that the history of record-keeping (or shall we say accounting) is as old as the history of commerce. However, as Mr. A. C. Littleton has pointed out in his interesting volume *Accounting Evolution to 1900*, the merchant or producer of goods, until comparatively modern times, thought of his business, not in terms of a continuous transaction, but rather as a series of separate unconnected ventures, the results of which could be, and were, determined immediately upon the completion of each separate transaction. This philosophy of commerce was particularly adaptable to the banking customs of the times, whereby the merchant or producer borrowed, when necessary, against the fulfilment of a specific transaction such as a trade voyage, the furnishing of a stipulated number of yards of cloth to some known purchaser, or some other transaction readily definable as to the time and method of completion. Furthermore, the then prevalent types of investment of business capital were principally those of the sole proprietorship, the joint venture, or the partnership comprising a comparatively small number of co-investors. Thus, business management was usually identified with ownership, and the managing owners were in a position to see, from day to day, whether or not the trend of business progress was favorable. Since it usually was sufficient for their purposes to know that their capital had increased or decreased through certain transactions, concerning the details of which they had first-hand knowledge, the investors of that era were not particularly concerned with a periodical statement of earnings, such as we are familiar with today.

As a result, the fifteenth century Italian Paciolo, who is credited with having put into words the basic methods of modern accounting, apparently gave no thought to the final orderly presentation, in something comparable to our modern financial statements, of the results compiled so scientifically by the double-entry system he described. It seems to have been late in the eighteenth century before any public recognition was given to the theory that the keeping of accounts should be carried through to a logical end, namely, the final expression of accounting data in financial statements. However, the emergence of the industrial era, with the resultant broadening of capital risk attendant upon the formation and operation of large industrial enterprises, marked the beginning of a new concept of the use of accounts. As the corporate form of enterprise, often comprising a large number of stockholders, became more prevalent, there was consequently created a class of investors who were not active in management of the business in which they had invested their capital. As a result, it soon became apparent that the reporting of individual transactions was too cumbersome a method of furnishing, to more than a limited number of the parties concerned, a history of business progress. Thus was evolved the practice of the periodical

* A paper before the Richmond Chapter of NACA.

statement of earnings, usually covering, as a matter of convenience, a period of a year, and supported by a statement of financial condition, or balance sheet, as of the end of the period for which the report of progress was made.

A similar evolution also occurred (but much later, and, to some extent, within recent years) in the generally accepted concept of the functions of cost accounting. It is reasonable to assume that cost-finding of some kind has been a vital concern of proprietorship or management since the time that the necessity for keeping records of commercial transactions first became apparent. One would find it difficult, indeed, to believe that the ironsmith or weaver who was engaged in the production of his wares a century or more ago did not have a rather definite idea of the costs of carrying on the various phases of his enterprise; otherwise, it is evident that the fixing of adequate sales prices would have been dependent wholly upon fortunate coincidence. However, there is no historical evidence that any integrated system of accounting prior to the nineteenth century contemplated the reflection of production costs as they are defined today. For example, in the United States very little was published on the subject of cost accounting until the middle of the eighteen-eighties, and about that time one of the few authorities on the subject was still advocating the complete separation of factory (or cost) accounting from the general accounts.

We are all familiar with the far-reaching influences which income taxation, industrial mass production, and conditions beginning about the time of the first World War had upon the art of cost accounting. From the day that the reliability of the results of cost-finding were first subjected to the cross-checks obtained by extending the double-entry system of records to include this phase of accounting, it was inevitable that there would be a universal realization that cost accounting and what is sometimes known as general accounting are in fact interdependent, and therefore mutually indispensable. It could not be otherwise, if it is indeed true that the principal function of accounting is the recording of day-by-day transactions in such a manner that a summary of those transactions can be readily prepared in a form which will clearly present to management and investors a true history of business progress.

I have made this excursion into the past annals of accountancy, because I believe it important to a proper consideration of the relationship of cost accounting to the art of accounting as a whole, and therefore to the final expression of accounting results as exemplified in financial statements. As we have seen, it is apparent that the modern system of accounting, when first evolved, was not aimed toward the idea of expressing bookkeeping results in financial statements. It was only after many years, under the influence of circumstances attendant upon the creation of a complex system of commerce and industry, that such expression assumed the significant role which it now occupies in the art of accountancy.

A statement of Corporate Accounting Principles, prepared by the Research Department of the American Institute of Accountants, and published in the October 1945, issue of the *Journal of Accountancy* holds that:

> It is evident that in the development of the principles of accounting for commercial enterprises, the corporate financial statements are considered the significant end products of the accounting process.

In the same article there is also quoted a portion of a statement by the American Accounting Association as follows:

> In the corporate field the most important use of accounting lies in the preparation of statements

of financial position and of operating results. So many vital decisions of business and government depend on the interpretation of such statements that they have come to be of prime economic and social significance.

From these pronouncements we may infer that the primary responsibility of ascertaining that the accounting processes, of which the financial statements are the end product, are in fact sound and are properly performed, rests squarely upon all divisions, including the cost-finding division, of a corporation's accounting department.

It may be argued that the responsibilities of the cost accountant, in properly planning and supervising the operation of a system of accounts which will adequately furnish the cost information necessary to a proper statement of financial position and results of operations, are no greater than those entailed in the assembling of cost or production data for purely managerial purposes. This is true, to the extent that all statements of costs are assumed, regardless of the purpose for which they are intended, to have been arrived at by the use of accounting procedures which were basically in accordance with those dictated by certain generally accepted principles of cost accounting. Such procedures would contemplate safeguards for the proper recording of all liabilities affecting costs, the making of adequate provision for depreciation of plant and equipment, and the compilation of all pertinent costs in a manner which would preclude the possibility of violence being done, in the basic accounts, to accepted principles of accounting.

However, because of the variety of uses and forms of statements issued by a corporation which may be based on information ordinarily obtainable by the cost department, it is possible that any error of principle or computation made by the cost accountant may have a more far-reaching effect upon the reputation or financial standing of a corporation than if the statement had been made for managerial purposes only. For these reasons, it is necessary that the cost accountant, from time to time, examine into, and challenge, the principles and mechanism of the cost-finding processes which result in the end product of financial statements.

In the interest of convenience, the problems which ordinarily present themselves may be divided generally into two categories, namely, those that:

1. Affect end results, such as the proper presentation of financial position and results of operations, and
2. Relate to the furnishing of information, which may be somewhat of a statistical nature.

It is an accepted principle of accounting that all charges against revenue necessary to the proper reflection of operating results shall be included in the profit and loss account. Thus, the basis of pricing inventories has a direct bearing upon the representation of financial position and the proper recording of earnings. It is obvious that the responsibility for such pricing basis, in so far as it rests upon cost, devolves principally upon the cost accountant.

Not so obvious are the answers to the questions which may arise to plague him. For example, let us suppose that a standard cost system is in use, and substantial variances exist between standard and actual costs during the period covered by the financial statements. Are the variances due to inadequacy of standards as originally estimated, or as affected by subsequent changes in wage rates or other operating factors? Do the variances in part or in entirety result from inefficiencies in plant operation? Do they possibly represent idle-plant expenses arising from diminished use of plant occasioned by lack of production? In short, is any portion of the balances in the variance accounts

properly applicable to the cost of the inventory, fairly computed as under normal conditions? If so, how much? Or will the inclusion of the additional amounts, if the balances are debits and are determinable as actual costs, result in inventory amounts which are in excess of those for which the inventories reasonably could be expected to be replaced or sold? Granting that no portion of the debit balance in the variance accounts is found to be includible in the cost of inventories, should it in fact be classified in the profit and loss statement as a part of cost of goods sold, or as a separate category of expense? Should a portion of a credit balance in a variance account be applied in reduction of inventory price, even though it is demonstrable that the credit arose as a result of a period of extraordinary plant usage?

Again, certain other questions often recur, regardless of the system of costs in use, whether it be a system of standard costs, job-costs, continuous production costs, or any of the offspring of these methods of cost-finding. Has factory overhead been properly applied? Has an inequitable method of departmental distribution resulted in an underpricing of goods which have reached a certain stage of production, or in the overpricing of goods in a further state of process? Have labor costs been properly segregated between those pertaining to plant operation and those properly capitalizable as the cost of additions to plant and property? Are certain factory expenditures properly applicable to selling, administrative, or general expenses? If provision has been made in the accounts for estimated costs of postwar reconversion, has proper segregation been made in the accounts of such costs as they were incurred? Has a segregation been made of similar costs, or of change-over costs when incurred in substantial amounts, even though they were not previously provided for? Under what circumstances, if any, may all or a portion of charges for amortization of war facilities allowable for purposes of Federal taxation be deemed to represent a fair measure of actual exhaustion or wear and tear of such facilities, and therefore an actual component of cost? Where, and to what extent, should such changes be recorded in the accounts? If recorded, should consideration be given to these changes in the determination of inventory prices?

Not directly within the province of cost-finding, but nevertheless in respect of representation in financial statements an active concern of the cost accountant, is the relationship of market values of raw materials to costs, particularly in the face of declining markets. What is the effect of such decline on the financial position of the company, as it is affected by inventory amounts at a given date? Is the market shrinkage an ordinary risk of the business and properly includible as a part of the cost of doing business, or is it of such an unusual nature that it properly can be considered an extraordinary loss? Granting it to be a part of the cost of doing business, can such a change properly be included in cost of goods sold? Here the cost accountant may inquire, with good reason, "How can the cost of what has been disposed of be affected by a decline in the value of what remains on hand?" As he concedes the point to the accounting convention whereby such losses usually are treated as an item of cost of goods sold in the earnings statement, he may remember that this treatment is based in part on an ancient accounting theory that the cost of goods sold in any period consists of the sum of the beginning inventory and the cost of goods produced or acquired, less the ending inventory. He may feel further justified in making his concession by referring to Regulations S-X, which stipulate the form and contents of financial statements which must be furnished, under certain circum-

stances, to the Securities and Exchange Commission. There he will note that disclosure is required as to the amounts and bases of pricing of opening and closing inventories, if such inventories are used in *computing* cost of goods sold.

In any event, there appears to be no difference of accounting opinion that market shrinkages in inventories should be reflected somewhere in the financial statements. With this in view, how can underlying records be most easily adapted to the recording of such shrinkage as it exists throughout the various stages of processing? Furthermore, is the corporation's contractual situation, both in respect to purchase and to sales orders, so balanced that the market decline will result in no actual loss to the business? In the accounting for a group of affiliated companies, to what extent are unrealized intercompany profits included in inventories? By the use of what accounting procedures can the amount of these unrealized profits be determined accurately and promptly, as may be necessary for preparation of consolidated financial statements?

Again, certain problems may be raised in the collation of information, principally of a statistical nature, to be included in financial statements required for special purposes by various governmental agencies. Particularly in connection with renegotiation of profits from war contracts, and in the preparation of Financial Statements, Forms A and B, required by OPA, business has experienced what may be only the beginning of numerous demands for extremely detailed information as to operating costs and expenses. Companies which publicly issue securities in excess of certain stated amounts, or which have securities listed on national security exchanges, must periodically furnish details of certain operating expenses, such as taxes, maintenance and repairs, provision for depreciation and amortization, rents and royalties, as required in Schedule XVI, under Regulations S-X, for use in financial statements and supporting schedules which must be submitted to the Securities and Exchange Commission. What revisions, if any, of underlying accounts are necessary to insure that this information may be obtained to an accurate degree with a minimum of clerical effort?

Of especial interest to the cost accountant are developments attendant upon the new "fact-finding" procedures advocated by the President of the United States, not only with respect to the extent of disclosure of cost information which may be required of a business if these procedures become mandatory in certain cases, but also because of the effect that certain ideas of cost and profits inherent in these procedures may, if generally accepted, have upon presently established procedures of cost accounting. We also have a recent ruling by a United States Circuit Court of Appeals, to the effect that inventory prices used for income tax purposes may not include, broadly speaking, amounts for costs or expenses separately provided for as deductions from income under Section 23 of the Internal Revenue Code. It is not difficult to imagine the radical changes which might be made necessary in existing methods of recording costs as a result of this opinion, if it is sustained in a higher court. Will the cost procedures presently in use be readily adaptable to meet the exigencies which may be created by these or other possible changes in basic principles?

The foregoing are some of the many questions arising from the operation of cost accounts which must be resolved in a fashion that will insure from such accounts an end product of financial statements which will stand testing by the criteria of accepted accounting principles in the presentation of a company's financial position and operating results. The proper

answers to these questions are clearly within the grasp of the experienced cost accountant, but often are obtainable only by the application of resourcefulness in obtaining cost information, and the exercise of careful judgment and ingenuity in the interpretation of the facts thus evolved.

SOME OBSERVATIONS ON DEPRECIATION ALLOWANCES*

PHILIP DONHAM

FOR YEARS there has been a pronounced conflict of opinion between the Internal Revenue Department of the United States Treasury and business management in general as to the propriety of different rates of depreciation allowances for physical assets. This conflict, which at times has reached the stage of an active dispute, has been costly to all. It has been costly in Revenue Department administration because of the time required of its engineering experts, its conferees, and its revenue agents in the field. It has been costly to management through the necessity of contesting disallowed deductions. Undoubtedly, depreciation allowances have been among the most disputed of corporate expense items. Furthermore, as the years have progressed since the introduction of corporate income taxes, the Revenue Department and management have tended to grow further and further apart in their thinking on this subject.

BACKGROUND OF THE PROBLEM

To a large extent opportunism has influenced the thinking of both sides. Management has been anxious to take deductions against taxes when it was known that there were taxes to absorb them. The Revenue Department has at all times had a natural desire to get taxes when profits were available to tax.

Conservative management has sought to take the safest course. Hard experience has proven to management that what has been charged off in good times cannot later be lost. There has been a natural reluctance on the part of management to scrap assets having a substantial book value, if only because such a step might be interpreted as a reflection of poor judgment as of the time the assets were bought. Management has shown an admirable hesitancy to carry assets at inflated values. Management's traditional tests for investing in new equipment have dictated that the new equipment must show promise of liquidating itself in two, three, or perhaps five years. Such tests obviously called for depreciation anticipated at a much more rapid rate than would be caused by mere wear and tear.

The Revenue Department has been guided in its thinking by a conservative approach. The Department has been careful to act in a manner that would result in like treatment for all. Influenced perhaps to some extent by a desire for simplicity of administration, the Department has set simple rules and applied them pretty generally to all alike. To an important degree the Department has undoubtedly been influenced by the responsibility placed upon it to collect taxes justly due.

Undoubtedly, there have been cases where management seeking temporary personal profit has attempted to put into

---

* Read before the Buffalo Chapter of NACA.

effect unreasonable rates of depreciation. Possibly there have been individuals within the government who would not be averse to speeding social change by enforcing unwise depreciation policies on corporations. Both of these extremes have certainly been rare, and neither of them is significant enough to require further comment here.

PRESENT REVENUE DEPARTMENT POLICY

The essence of the present policy of the Revenue Department is that depreciation rates should be based on physical life. To effectuate this policy the Department has set up comprehensive tables of statistical averages from which appropriate rates of allowable depreciation are determined. Certain difficulties arise out of this philosophy and practice.

A study of business history discloses beyond doubt that obsolescence far outweighs wear and tear in making equipment unserviceable. Since obsolescence cannot be predicted in advance, historical statistical tables do not serve the purpose for which they are intended. Obsolescence varies between industries. In a young growing business the rate of obsolescence is generally much greater than that in a mature stable industry. Yet both may have similar equipment with equal prospects of physical life. To insist upon holding both to the same statistical average penalizes the younger industry.

Some business opportunities are temporary, as for example, the manufacture of games that for a time are a fad—like jigsaw puzzles in the early 1930's. Unless the manufacturer is allowed to charge off his equipment during the life of the fad, he will be left with heavy losses when the fad dies down and his market is gone. Taxes on his fictitious profits will prove to have been a capital levy.

Even in the absence of such special circumstances as that just described, the reluctance of management to replace physical equipment which has not been fully depreciated has led to a policy of replacing parts of machines from time to time instead of making a substitution of new whole units for obsolete old ones. The actual physical life of equipment has thus tended to become a multiple of the normal life of that equipment. Obviously the result of Revenue Department pressure has been to increase the apparent normal life of assets in the Department's statistical tables. This in turn has tended to diminish still further the rates of depreciation allowed. This vicious circle has undoubtedly reduced the market for new equipment and limited job opportunities.

TIME FOR A CHANGE

When two groups of people who have to deal with each other hold opposing points of view on a subject for a long time, it is desirable to reconcile the conflict. During the excess profits tax years it was not practicable to bring about a modification in the policy of the Revenue Department. Since tax rates were known to be temporary, very high freedom of choice by management on depreciation rates would have resulted in abuses on a large scale. Much permanent plant would have been built almost completely at government expense. Furthermore, regardless of whether or not the policy of the Department prior to the war was sound, it was certainly proper to permit no change in that policy between the base period and the excess profits tax years if only to keep them as nearly comparable as possible. The same reasoning would justify the continuance of past policy until the end of the carry-back period.

This unique tax period is about to pass into history, and it is time to review government policy and consider whether it is the best for the interests of all. In starting such a review some assumption must be made about future corporate tax rates.

The only reasonable assumption—no matter how painful—is that there will be little change in these rates for a long time in the future now that excess profits taxes have been eliminated. Under these circumstances, the government will collect from profitable businesses the same amount of tax year in and year out regardless of its rules about deductions for depreciation allowances. Under stable tax rates management has nothing to gain and a lot to lose by using inappropriate rates of depreciation. Stable tax rates, then, can be counted on to discourage deliberate deception by management.

CHANGE RECOMMENDED

If a new policy is desirable, what should it be? My first choice would be for the Internal Revenue Department to permit management to use its own best judgment. This policy would be in the tradition of the private enterprise system where the management with the best judgment would profit the most. This policy would encourage adequately rapid write-offs by enterprising business managers. Even a crystal ball gazer cannot tell in advance when a physical asset will have served its useful purpose. This, of course, is at the root of the difference of opinion between the Revenue Department and management. Yet with all the variables to consider, certainly management is in a better position in most situations than the Revenue Department to estimate what the future will bring.

If the Revenue Department is unwilling to give management this freedom of choice, then and only then, I would offer a substitute plan. This plan would tie depreciation allowances into new capital investment. Such a program might require that over any five-year period (possibly ten-year) the amount of money charged as depreciation allowances by a corporation be either: (a) spent on new equipment or, (b) returned to stockholders as a refund of capital, presumably available for investment in other more enterprising businesses. To implement this policy it would be a part of the plan that tax penalties would be levied against the unused portion of depreciation allowances. Such penalties might be simply a tax equivalent to the rates in effect at the time unused allowances were first taken as tax deductions, with interest at 6 per cent from the time the original tax would have been due.

Probably this alternative plan would require Congressional action, and in any case it would have to be spelled out with great care to avoid inequities and abuses.

BENEFITS OF THE SUGGESTED POLICY

Freedom of choice to management, or even freedom of choice subject to penalties under certain circumstances, would permit management a broad flexibility of action determinable from the known specific facts in each case. The result would undoubtedly be rates of depreciation reflecting more truly the varying rates of obsolescence and physical wear from industry to industry. Under relatively stable tax rates management would benefit from good objective judgment on depreciation allowances and would pay a penalty for bad judgment. The management which did the best job of selecting appropriate rates would be rewarded by a steadier profit margin from year to year. Stockholders and directors like steady profits. The management which chose the most accurate rates would be rewarded with sounder unit costs, giving a truer picture of the profits—a real help in making wise marketing and production decisions. The management which for one reason or another chose artificially inflated depreciation rates would be penalized. Such excessive rates make for inept, widely fluctuating "costing" because in the early life of equipment costs are overstated and in the later life of that equipment they

are understated. Costing is a hazardous enough endeavor in any case without such a handicap. The management that set depreciation rates too high might price its products right out of the market with permanently lost opportunities. Recognizing these potential rewards for wisdom and penalties for lack of it, management would tend to seek the most appropriate rates of depreciation.

Because the pressure of the Revenue Department has discouraged rapid write-offs, the elimination of this pressure would certainly encourage more rapid write-offs. Under these circumstances there would be a reversal of the trend toward partial replacement of equipment, with a tendency for more replacement of obsolete equipment in whole units. This program would result in more prompt rejuvenation of plant with corresponding increases in efficiency and job opportunities. Because fluctuations in the construction of new buildings, new plants, and new machines contribute greatly to booms and depressions, a program that encouraged steady, rapid rejuvenation of corporate assets would tend to level out the economy of the country. Anything that tends to level the activity in these basic industries would be a great boon to America.

Temporarily losses in taxes would be incurred while management was converting its reserves to a more conservative basis. The amount of loss would be very small, and once the change-over had been completed, it would not continue.

In the long run the government would gain. It would gain to the extent that any action that improves business management benefits the American people as a whole. It would gain to the extent that in unstable businesses sound depreciation policies may well represent sooner or later the difference between financial success and failure. If businesses are stamped out as a result of unwise decisions brought about for any reason, the Government and the people suffer.

Under the plan outlined above permitting management freedom of choice within carefully prescribed limits, there would still be a high expense of Revenue Department administration, and undoubtedly a continuance of contests between the Revenue Department and management over depreciation rates. There would still remain the problem of distinguishing between what is a capital asset and what is not. There would also be many other unpredictable problems. Under the plan permitting management complete freedom of choice in depreciation rates, the administrative costs of the Revenue Department would be at a minimum. Costs to management of contests over depreciation rates would be eliminated. This plan also has the advantage over the other of greater flexibility.

Let it be understood in closing that I have no vision here of curing all our economic ills simply by modifying the policy of the Internal Revenue Department with respect to depreciation allowances. I do, however, believe that a change in this policy would result in real benefit to American business and to the American people. It is hoped that the Internal Revenue Department and, if necessary, the Congress of the United States will give the problem at hand most careful thought.

COST AND OUTPUT RELATIONSHIPS

HAROLD G. AVERY AND M. POLLACK

WHAT WILL BE the effect on a company's unit cost if labor costs increase 20 per cent during the next year, assuming that other production costs remain the same? Or, suppose that unit output will remain the same and production costs, particularly labor costs, will increase 20 per cent. What will be the percentage increase in cost per unit? A specific answer to these questions is being sought by businessmen everywhere. Unit costs obviously will vary with output, and a mathematical formula which would help to establish the relation of such variation would be of practical value.

The problem is one of measuring relationships by the use of ratios and percentages. A study of recent accounting literature discloses a very limited use of ratios and percentages to determine the effect of changes in costs and output on the final unit cost. Most of the literature, especially in the case of budget forecasting, approaches the problem by showing the changes in costs and output in terms of absolute amounts.

For this article the problem and solution method is believed to be the most succinct manner for presenting this material. The first problem will show the effect on unit cost of various changes in total cost and unit output; the second will deal specifically with the determination of unit meal cost when changes are contemplated in total meal costs and number of meals served; and the third will show the unit output necessary to cover increased costs of production if unit cost is to remain the same. In all these problems, unit costs will vary in inverse proportion to output.

USE OF RATIOS AND PERCENTAGES

Ratios as used in the formulae may be defined as quotients, and percentages may be defined as quotients (or ratios) multiplied by 100. A hypothetical table is constructed (Exhibit A) showing the unit output, fixed and variable costs, total costs, and unit cost for 1940, 1941, and 1945. Management must first determine a base year or, in the case of standard costs, basic standards, from which variations can be measured. For the sake of developing this paper, it is first assumed that 1940 will be used as the base year. The amounts in the years 1941 and 1945 are determinable by the use of ratio and percentage change estimates. Costs are classified according to their fixity or variability so that each type of cost can be considered separately when measuring increases or decreases for subsequent periods.

Total costs are divided into only fixed and variable costs in the present study for the purpose of simplicity, but the formulae can be expanded to include any number of different cost classifications, such as labor costs, depreciation, rent, and indirect expenses. The inclusion of too many elements of cost, however, will increase the mathematical computations, and eventually a point will be reached where individual percentage changes will have little significance.

Total cost, fixed and variable costs, unit output, and unit cost are absolute amounts for the base year 1940. It is assumed that the total costs of operating equal 100 per cent, with the fixed costs and variable costs amounting to 55 per cent and 45 per cent, respectively, of total costs. Cost per unit is $2.712, based on an output of 36,500 units. After the amounts of unit output, fixed costs, variable costs, total cost, and unit cost are determined, each amount is assumed to have a ratio of 1.00. (There is no

EXHIBIT A

TABLE SHOWING EFFECT OF FIXED AND VARIABLE COST CHANGES ON UNIT COST FOR 1941 AND 1945, USING 1940 AS A BASE

	1940			*1941*			*1945*		
	Amount	*% of Total*	*Ratio*	*Amount*	*% of Total*	*Ratio*	*Amount*	*% of Total*	*Ratio*
Unit Output	36,500		1.00	27,375		.75	40,150		1.10
Fixed Costs	$54,450	55	1.00	$53,360	57	.98	$55,000	50	1.01
Variable Costs (incl. labor)	44,550	45	1.00	40,095	43	.90	55,000	50	1.235
Total Cost	99,000	100	1.00	93,455	100	.944	110,000	100	1.11
Unit Cost	$2.712		1.00	$3.413		1.258	$2.739		1.01

objection to calling this ratio an index of 100, but the use of the term "index number" is omitted in this discussion.)

Formula "A"

Formula for Computing Unit Cost Without Measuring Effect of Each Ratio on Unit Cost

(1) $Rfc+Rvc$ = (Ratio of fc base year to total cost base year × ratio of fc given year to fc base year) + (Ratio of vc base year to total cost base year × ratio of vc given year to vc base year)

(2) $Rg = \dfrac{Rfc+Rvc}{RO}$

(3) $Cg = Cb \times Rg$

Explanation of symbols:

fc = Fixed costs
vc = Variable costs
Rfc = Fixed cost ratio
Rvc = Variable cost ratio
RO = Ratio of output in given year
Rg = Ratio of unit cost in given year
Cg = Unit cost given year
Cb = Unit cost base year

Formula "B"

Formula for Computing Unit Cost by Measuring Effect of Each Ratio on Unit Cost

(1) $r_1g = (Ob \div Og) - 1.00$
(2) $r_2g = (Clg \div Clb) - 1.00$ (See (5) and (6) below)
(3) $r_3g = r_1g \times r_2g$
(4) $r_g = r_1g + r_2g + r_3g$
r_3g = Sum of percentage changes in fixed and variable costs; thus
(5) $r_4g = (Fcg \div Fcb) - 1.00 \times (Fcb \div Clb)$
(6) $r_5g = (Vcg \div Vcb - 1.00 \times (Vcb \div Clb)$

Explanation of symbols:

Cl = Total cost
O = Unit output
g = Given year
b = Base year
Fc = Total fixed costs
Vc = Total variable costs
r_1g = Ratio change attributable to unit output
r_2g = Ratio change attributable to total cost
r_3g = Ratio change attributable to the effect of change in unit output on the change in total cost
r_4g = Ratio change attributable to fixed costs
r_5g = Ratio change attributable to variable costs
r_g = Total ratio variation

Problem I. Using 1940 figures in Exhibit A as a base, what will be the percentage variation in unit cost in 1945 if fixed costs increase 1 per cent, variable costs increase 23.5 per cent, and unit output 10 per cent? The percentage relationships of fixed and variable costs to total costs for the base year and 55 per cent and 45 per cent (ratios .55 and .45) respectively.

Solution 1. Using Formula "A" the following calculations would be made:

(1) $Rfc+Rvc = (.55 \times 1.01) + (.45 \times 1.235)$
$= .5555 + .55575$
$= 1.11125$

(2) $Rg = \dfrac{1.11125}{1.10} = 1.0102$

(3) $Cg = \$2.712 \times 1.0102 = \$2.739$

Fifty-five per cent of the total cost in the base year increases 1 per cent, whereas the remaining 45 per cent of total cost increases 23.5 per cent thus increasing the total cost of the given year 11.125 per cent (ratio 1.11125) as shown in Step (1) above. Since the increase in output of 10 per cent

would have an opposite effect on the cost per unit, the net increase in cost per unit is found by dividing the ratio change attributable to increased costs by the ratio change attributable to increased output. The result is a ratio of 1.0102, which is interpreted as a net increase in unit cost of 1.02 per cent. The new unit cost is found by multiplying the base unit cost of $2.712 by the ratio increase of 1.0102, or $2.739.

Solution 2. Using the same figures as given in Problem I, the following solution would result in the application of Formula "B":

(1) $r_1g = (1.00 \div 1.10) - 1.00$
$= -.0909$

(2) $r_2g = (1.11125 - 1.00)$
$= .11125$ (See (5) and (6) below)

(3) $r_3g = -.0909 \times .11125 = -.0101$

(4) $rg = -.0909 + .11125 - .0101$
$= +.01025$ or 1.025%

(5) $r_4g = (1.01 \div 1.00) - 1.00 \times (.55)$
$= .0055$

(6) $r_5g = (1.235 \div 1.00) - 1.00 \times (.45)$
$= .10575$

$r_2g = .0055 + .10575 = .11125$ (See (2) above)

The solution to Problem I by using Formula "B" is that unit cost in 1945 will increase 1.025 per cent over unit cost in 1940. Total costs, which included fixed and variable costs, will increase 11.125 per cent over 1940. If the base unit cost of $2.712 is multiplied by the percentage increase of 1.025 (ratio .01025), the increase in unit cost will amount to $.027; thus making the estimated unit cost in 1945 equal to $2.739, the same solution as determined by Formula "A".

COMPARISON OF FORMULAE

Both formulae can be used to estimate the new unit cost in 1945 ($2.739) by the use of ratio and percentage changes. The amounts in Exhibit A for 1945 can be determined by converting the ratio changes into absolute amounts; thus, if unit output increases 10 per cent in 1945 over the base year in 1940, the amount of output in 1945 would be $36{,}500 \times 1.10$ or 40,150 units. The amount of fixed costs, variable costs, and total cost can likewise be determined.

Formula "A" shows the ratio changes plus the ratio of 1.00 for the base year, whereas Formula "B" shows only ratio increases or decreases. Although Formula "A" is the shorter method for obtaining the estimated unit cost in a given year, it does not contain certain information which may be pertinent to a particular problem, such as the effect of the ratio change of each element of cost on the final unit cost. For example, Formula "B" shows that an increase of 1 per cent in fixed costs increases the unit cost .55 per cent (ratio .0055); and an increase of 23.5 per cent in variable costs increases the unit cost 10.575 per cent. Both formulae, however, show a total increase in unit cost amounting to 11.125 per cent, although it is measured in Formula "A" by the ratio of 1.11125 and in Formula "B" by the ratio of .11125. The increase in Formula "A" is determined by subtracting the base year ratio of 1.00 from the ratio of 1.11125.

Step (2) in Formula "A" simply shows the percentage increase plus the base year ratio of 1.00 in the total unit cost over the base year; on the other hand, Formula "B" shows that an increase in output of 10 per cent lowered the unit cost 9.09 per cent in 1945, and also the fact that the net effect of the variation in output on the variation of total cost decreased the unit cost 1.01 per cent (ratio,—.0101). The sum of the cost and output variations in Formula "B" equals the same percentage increase as shown in Formula "A," or 1.02 per cent (1.0102—1.00). The new unit cost is found directly in Formula "A" by multiplying the base year unit cost by the ratio of 1.0102, whereas another arithmetical step is necessary to calculate the 1945 unit cost

in Formula "B." Since the latter only shows the net increase, the base year unit cost is multiplied by the increase of 1.025 per cent (decimal places were carried out further in this formula), resulting in an increased unit cost of $.027, or a total cost of $2.739 ($2.712+$.027).

The formulae can also be used to measure ratio and percentage changes of absolute amounts which have resulted in the past. For example, by using 1940 as a base the relative changes in unit output, fixed costs, variable costs, total cost, and unit cost can be determined for the year 1941. A decrease in unit output of 25 per cent will increase the unit cost in 1941 by 33⅓ per cent if Formula "B" is applied. A decrease in fixed costs of 2 per cent will decrease unit cost 1.1 per cent, and a decrease in variable costs of 10 per cent will decrease unit cost 4.5 per cent. Both Formula "A" and Formula "B" will show that decreased total cost in 1941 as compared with 1940 will decrease unit cost a total of 5.6 per cent. Formula "B" further indicates that the effect of a 25 per cent decrease in output on a 5.6 per cent decrease in total cost will cause a net decrease variation of 1.866 per cent on unit cost. Summing up the three variations affecting unit cost—33⅓ per cent increase attributable to the change in output, 5.6 per cent decrease attributable to decrease in costs, and 1.866 per cent decrease attributable to effect of change in output on change in total costs—the net increase in unit cost amounts to 25.864 per cent or $.7014. Added to the base figure for unit cost of $2.712, the unit cost in 1941 will amount to $3.413, the result found in Exhibit A.

It must be recognized that any year can be selected as a base. All that is necessary after the base year is selected is to consider the ratios of the factors involved as 1.00 or 100 per cent, and to calculate the percentage relationships of fixed and variable costs (or whatever division of costs is made) to total costs. An appendix has been constructed showing the effect on the figures given in Exhibit A of switching the base years of 1940, 1941, and 1945, and using the two formulae developed in this paper.

DETERMINATION OF UNIT MEAL COST

Problem II. Using the 1940 figures as a base in Exhibit B below, what will be the estimated unit cost in 1945 if the total number of meals served will increase 25 per cent; food cost will increase 33⅓ per

EXHIBIT B

TABLE SHOWING BASE MEAL COSTS FOR 1940 AND ESTIMATED RATIO CHANGES FOR 1945

	1940			*1945 Ratio to Base Year*
	Amount	*% of Total*	*Ratio*	
Total Meals	160,000		1.00	1.25
Food Cost (*fc*)	$24,000	75	1.00	1.33⅓
Service Cost (*sc*)	8,000	25	1.00	1.25
Total Cost	$32,000	100	1.00	(1.3125)*
Unit Cost per Meal	$ .20		1.00	(1.05)

* Figures in parenthesis are calculated.

Solution 1. By the use of Formula "A" the following calculations would result:

(1) $Rfc+Rsc=(.75\times1.3333)+(.25\times1.25)$
$=1.00+.3125=1.3125$

(2) $Rg=\frac{1.3125}{1.25}=1.05$

(3) $Cg=\$.20\times1.05=\$.21$

Solution 2. Using Formula "B" the following would be obtained:

(1) $r_1g=(1.00\div1.25)-1.00$
$=.80-1.00=-.20$
(2) $r_2g=.3125$ (See (5) and (6) below)
(3) $r_3g=-.20\times.3125=-.0625$
(4) $rg=-.20+.3125-.0625=+.05$
Amount of $rg=\$.20\times.05=\$.01$
$Cg=\$.20+\$.01=\$.21$
(5) $r_4g=(.33\frac{1}{3})\times(.75)=.25$
(6) $r_5g=(.25)\times(.25)=.0625$
$r_2g=.25+.0625=.3125$ (See (2) above)

cent; and service cost including labor will increase 25 per cent? The base year relationships of food cost and service cost to total cost are 75 per cent and 25 per cent (ratios .75 and .25) respectively.

The ratios for 1945 express the estimated relationships of the various cost factors of food and service as compared with the base year of 1940. It is seen above that the unit cost per meal will increase 5 per cent over the base year. This makes a total increase of $.01 over the base cost of $.20, or an estimated unit cost of $.21 in 1945. Formula "A" shows that total costs will increase 31.25 per cent, whereas Formula "B" shows a breakdown of this figure into 25 per cent attributable to the increase in food cost and 6.25 per cent attributable to the increase in service cost. Furthermore, Formula "B" shows that a 25 per cent increase in total meals served will decrease the cost per unit 20 per cent if other factors remain the same. Increased costs will increase the cost per unit 31.25 per cent if total meals served would remain the same as they were in 1940; however, total meals served actually increased 25 per cent. The effect of one variation on the other, i.e., the increased number of meals served on the increased cost, will cause a further decrease of 6.25 per cent on the unit cost. Adding these variation changes—20 per cent decrease for meals served, 31.25 per cent increase for costs, and 6.25 per cent decrease for effect of meal output change on cost change—the net increase in unit cost will be 5 per cent.

MEASUREMENT OF CHANGE IN OUTPUT

Formula "A" may also be applied to determine the increase in unit output necessary to cover increases in total cost and to maintain the same unit cost as in the base year. Suppose the amounts shown in Exhibit C are recognized as the base year:

EXHIBIT C

TABLE SHOWING BASE UNIT OUTPUT FOR 1940 AND ESTIMATED RATIO CHANGES FOR 1945

	1940			*1945 Ratio to Base Year*
	Amount	*% of Total*	*Ratio*	
Unit Output	320		1.00	(1.175)*
Labor Cost (*lc*)	$80,000	50	1.00	1.25
Other Costs (*oc*)	80,000	50	1.00	1.10
Total Cost	160,000	100	1.00	(1.175)
Unit Cost	$ 500		1.00	1.00

* Figures in parenthesis are calculated.

Problem III. What will be the total unit output necessary in 1945 so that unit cost in 1945 will remain the same as it was in the base year, if wages are increased 25 per cent and other costs increase 10 per cent? It is assumed for the sake of simplicity that labor cost is 50 per cent (ratio .50) of the total cost.

Solution. Formula "A" would be applied to the solving of the problem as follows:

(1) $Rlc \times Roc = (.50 \times 1.25) + (.50 \times 1.10)$
$= 1.175$

(2) Since $Rg = 1.00$

(3) $$RO = \frac{1.175}{1.00}$$
$$= 1.175$$

Total cost will increase 17.5 per cent; therefore, in order for unit cost to remain the same (ratio of 1.00) the total unit output will have to increase 17.5 per cent, or a total of 56 units. This can be proved as follows: Labor cost will increase 25 per cent to an amount of $100,000 for 1945; other costs are estimated to be $88,000, an increase of 10 per cent over 1940; or a total cost in 1945 amounting to $188,000. This figure is an increase of $28,000 over 1940, or an increase of 17.5 per cent. Since the unit cost must be the same, or $500, the number of units produced must be in-

creased to 376 (188,000+500), or an increase of 56 units.

This problem shows that if management is confronted with increased costs on one hand and a price ceiling based on 1940 costs on the other, the only alternative for management under such circumstances would be to increase the productivity of the plant, if the same base price and profit structure were to be maintained.

Cost and output relationships can be measured by percentages and ratios. The above formulae can be used as an expedient device to determine the effect of variations in cost and output relationships. Such formulae may be carried to a refined degree although, in practice, estimates of absolute amounts rather than percentages have been preferred in budget forecasting. The ratio formulae contain the inherent weakness of any method of forecasting. costs, either in absolute changes of amounts or in percentage relationships; nevertheless, for practical reasons some period must be selected as a base and the cost and output relationships must be estimated for the future period.

APPENDIX

Effect of Changing the Base Year

Formula "A"

	Rfc	*Rvc*	*Rfc*+*Rvc*	*RO*	*Rg*	*Cg*
1940 Base; 1941 Given	.5390	.40500	.94400	.75	1.2586	$3.413
1940 Base; 1945 Given	.5555	.55575	1.11125	1.10	1.0102	2.739
1941 Base; 1940 Given	.5816	.47777	1.05937	1.333	.7947	2.712
1941 Base; 1945 Given	.5875	.58983	1.17733	1.467	.8025	2.739
1945 Base; 1940 Given	.4950	.40500	.90000	.909	.9901	2.712
1945 Base; 1941 Given	.4851	.36450	.84960	.682	1.2460	3.413

Formula "B"

	r_{fg}	r_{vg}	r_{tg}	r_{ag}	r_{ng}	r_g	$r_g \times Cb$	Cg
1940 Base; 1941 Given	.3333	−.0560	−.01866	−.0110	−.0450	.25864	.7014	$3.413
1940 Base; 1945 Given	−.0909	.11125	−.01010	.0055	.10575	.01025	.0277	2.739
1941 Base; 1940 Given	−.2500	.0593	−.01482	.0116	.0477	−.20552	−.7014	2.712
1941 Base; 1945 Given	−.3182	.1773	−.05641	.0175	.1598	−.19731	−.6734	2.739
1945 Base; 1940 Given	.1000	−.1000	−.01000	−.0050	−.0950	−.01000	−.0273	2.712
1945 Base; 1941 Given	.4666	−.1504	−.07017	−.0149	−.1355	.24600	.6737	3.413

COSTS AND VOLUME IN THE MILK PASTEURIZING INDUSTRY

MAX J. WASSERMAN

THE RELATIONSHIPS between costs and volume of output have long constituted an important segment of business policy, accounting, and economic theory. Analyses of these relationships are utilized in value, price, and distribution theory as well as in business policy development and economic planning. In spite of the importance of these relationships, few actual data are publicly available for studying them since the materials must be derived from a detailed analysis of the books of account of industry. In a world of private business, such data are not commonly available for publication.

The Agricultural Adjustment Administration, in 1933, obtained under oath and in sufficient detail for cost and output analysis, the balance sheets and operating-cost statements of a representative group of milk pasteurizers and distributors operting in thirty-five important milk markets. These financial statements, which were obtained in view of the preparation of milk-marketing agreements, were audited and expressed in a standard form by the accountants of the Agricultural Adjustment Administration. A total of 225 usable returns was received, and the data drawn from these form the basis of this study.

Since the dairies which submitted these returns dealt in fluid milk and a variety of milk products, it was necessary to make certain adjustments in the financial data to render them comparable. The sales of ice cream and the costs associated with the production and distribution of ice cream were eliminated, because not all the dairies dealt in this product. Then all the milk and milk products, of varying butterfat content, were reduced to a standard butterfat content of 3.5 per cent, and the costs of production and receipts from sales adjusted to this standard. Although this is the practice usually employed in cost analysis of the milk industry, it should be noted that the expression of all values in terms of butterfat content tends to distort certain costs—especially selling and delivery costs—since it is no more expensive to sell cream than milk, although cream contains more butterfat and is, therefore, charged a higher proportion of cost. However, since milk of 3.5 per cent butterfat content was by far the most important product of these dairies, the distortion is not believed to be large.

In studies of cost, it is the usual practice to examine the variation of the per-unit costs of production in a single plant under conditions of a changing volume of output. Since the data here employed are for a single year, and only one output figure was obtained for each company—the total output for that year—this study does not examine the movement of costs for a single plant under varying amounts of production. It examines the costs of 225 plants under the volume of output prevailing in each plant, in an effort to learn whether those plants whose volume was larger had the higher or the lower costs. It is thus the study of the operating efficiency of an industry of national scope, composed of many plants, rather than of the relationship existing between efficiency and volume in a single plant.

Because of the varying conditions of cost and prices prevailing in the markets included in this study, which may have affected the movement of costs independently of volume, the results of this analysis must remain inconclusive. The inferences drawn may not point entirely to opera-

tional efficiencies and inefficiencies, but to the superior or inferior bargaining ability of some plants and the different levels of cost which prevail in the several localities covered by the data.

For the purpose of establishing cost curves which fit the data and, at the same time, of determining the relationships between the various costs and volume of output the statistical technique of correlation was employed. Each type of cost was correlated with the volume of output, the coefficient of correlation calculated and a regression line, r on the charts, fitted. The technique employed was the method of simple, full correlation of Rietz and Crathorne as described in *Handbook of Mathematical Statistics*, H. I. Rietz, editor, Chapter VIII. The parameters, a and b, were determined, and the ratio of the coefficient to the standard error computed. In view of the widely varying output of the plants studied in this analysis and to reduce the charts to workable size, the volume of output of each plant was expressed and plotted on the charts in terms of the logs of 10,000 quarts volume per year.[1]

The technique of simple, rather than multiple, correlation was employed in this study because of the nature of the data received from the milk processors and the focus of interest of the analysis. The data received were not complete, and those items available were selective. The interest of the study was not centered upon the relationships between the several classes of costs (the dependent variables) and volume (the independent variable) but upon the behavior of each type of cost considered individually with volume. This interest corresponds to the nature of costs in the milk-processing industry, in which there is little relationship between the several types of cost.

The costs included in this analysis do not include direct capital costs, such as interest. Consequently, the relationships shown between cost and volume illustrate the efficiency of capital as a laborsaving device, and do not indicate the extent to which the capital costs themselves are reduced when utilized in conjunction with a large volume of output. The analysis does, however, indicate the extent to which large capital investments, associated with large output, act to save labor costs.

The dairies which submitted the data divided the costs into three groups: processing costs, selling and delivery costs, and general and administrative costs. This division enables a separation to be made between those costs, like processing, in which large increments of capital are used and which employ machine methods, and those which do not. This practice, further, permits a sharper definition of the relationships between costs and volume than is the case when all costs are grouped together. As the following development shows, not all costs in the milk pasteurizing and delivery industry fall within the same category.

Processing Costs: These costs are the sum of all direct costs in conjunction with the pasteurizing, bottling, capping, and cooling of milk and all direct costs in connection with the manufacture and preparation for delivery of cream and milk products. The pasteurizing of milk and the manufacture of milk products are highly mechanized processes in which a considerable investment in fixed capital is utilized. This work is carried on by production-line methods which utilize a relatively small labor force. It may, therefore, be classed in the machine-process industry group.

Chart 1 (at the top of the next page) pre-

[1] Since the Agricultural Adjustment Administration obtained the financial statements from the firms under an agreement not to publish any data based on them in such a manner as to reveal the sales or any financial data of the individual firms, it is obviously impossible to publish the observations upon which this analysis is based. Good scientific practice would demand the publication of the observations, but unfortunately that cannot be done in this case.

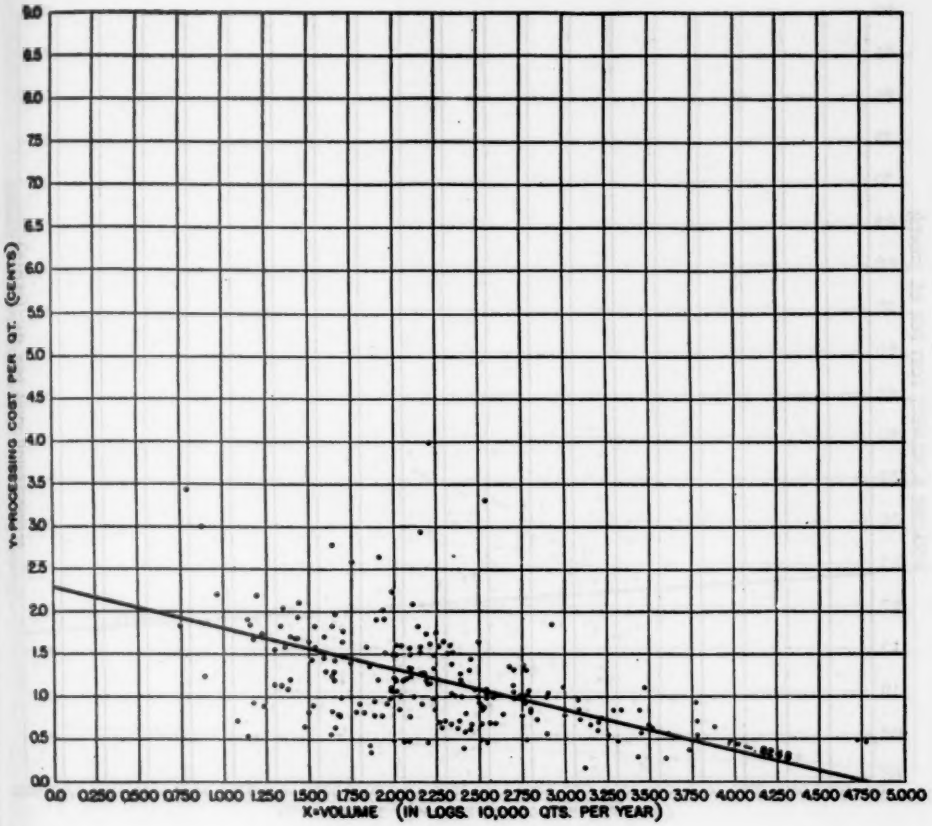


CHART 1

sents the relationships between processing costs and volume. The coefficient of correlation, $r = -.5245$, shows that large output is associated with low costs and small output with high costs. The parameters are $a = 2.274$, $b = -.4768$, and the ratio of the coefficient to the standard error, 10.73, indicates that the correlation is probably not due to chance alone. The slope of the regression line suggests that the processing of milk and milk products is an operation of the decreasing-costs type.

Selling and Delivery Costs: These costs are the sum of all direct expenditures imputable to the cost of making sales and to the delivery of milk and milk products from the plant to the purchaser. This type of operation is one which, under the practices which prevailed in 1933 and which are still in effect, lends itself neither to the employment of large increments of capital nor to production-line methods as in the case of processing. In selling and delivery trucks of limited capacity are used under conditions of competition in which the milk routes of one dairy duplicate those of its competitors serving the same territory. It is essentially a hand, rather than a machine, operation.

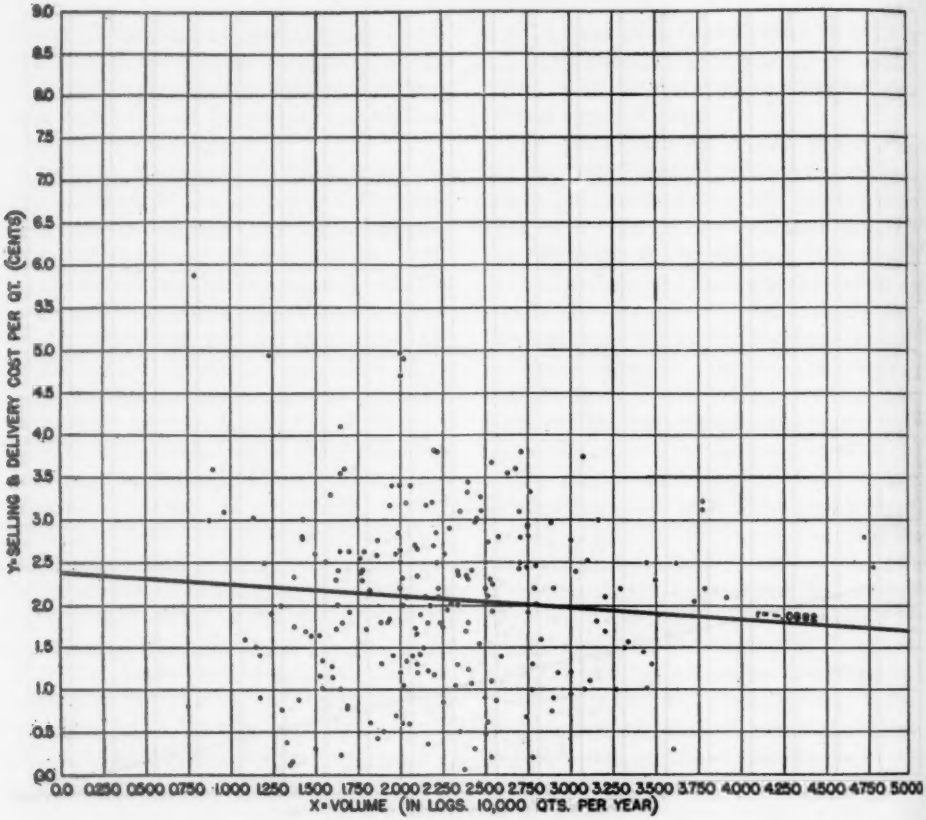


CHART 2

Chart 2 presents the relationships between selling and delivery costs and volume. The coefficient of correlation, $r = -.0882$, indicates that there is no relationship between the two. The parameters are $a = 2.3770$ and $b = -.1318$, and the ratio of the coefficient to the standard error, 1.31, shows that whatever relationship may exist is probably largely due to chance. The slope of the regression line indicates that there is but little advantage to be derived from size as measured by volume of output and points to the inference that selling and delivery costs may be placed in the category of relatively constant costs.

General and Administrative Costs: The sum of all the indirect costs associated with the operation and management of a milk pasteurizing and delivery plant which cannot be logically allocated to any specific operation are here defined as general and administrative costs. These operations employ much labor and expendable office supplies and utilize only a minimum amount of capital in the form of office machines and equipment. These operations are, therefore, essentially of the hand-industry type.

Chart 3 shows the relationships existing between general administrative costs and

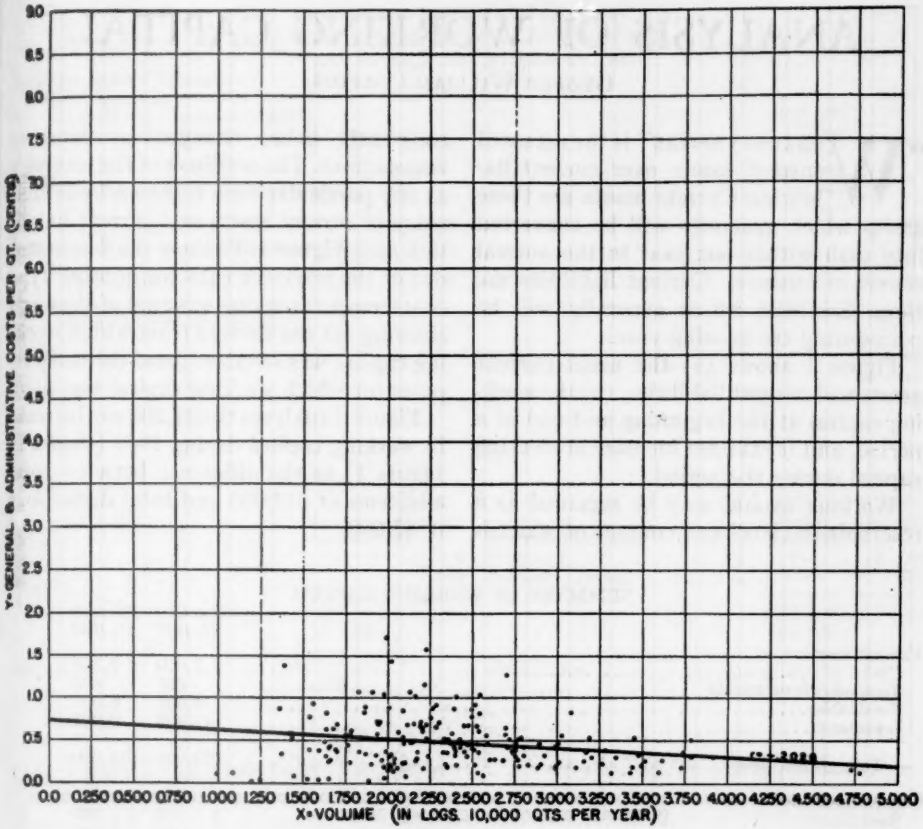


CHART 3

volume. The coefficient of correlation, $r = -.2026$, indicates that there is little, if any, relationship between this type of costs and volume of output. The parameters are $a = .7233$ and $b = -.1033$, and the ratio of the coefficient to the standard error, 2.94, is significant and indicates that the relationship is not due entirely to chance. The slope of the regression line shows a slight tendency for costs to decrease with increasing volume, but this tendency is not sufficiently marked to permit the classification of general and administrative costs in the decreasing-costs category.

This analysis tends to support the general theory of the relationships between costs and volume. Those costs—processing costs—in which relatively large amounts of capital and machine processes were utilized show characteristics of the decreasing-costs type. Those costs—selling and delivery and general and administrative—in which little capital was used and which were essentially hand processes, tend to fall within the constant-costs classification.[2]

[2] It should be noted that this analysis in no way reflects the practices or policies of the United States Department of Agriculture or of the Agricultural Adjustment Administration in the matter of milk-marketing agreements and licenses. The data analyzed cover the year 1933, when few of the milk-marketing agreements and licenses were in effect, and those that were under application had been placed in effect only in the last months of that year.

ANALYSIS OF WORKING CAPITAL

GEORGE WILLIAM COLLINS

"WORKING CAPITAL" is the excess of current assets over current liabilities. Current assets are those assets which generally will be converted into cash within one year in the normal course of business. Current liabilities are those liabilities which generally will be paid during the ensuing year.

Figure 1 shows (a) the usual current assets and current liabilities, (b) the working capital at the beginning and end of a period, and (c) the net increase in working capital during the period.

Working capital may be regarded as a reservoir the level and content of which is constantly being changed by business transactions. The *condition* of the reservoir at any particular time is shown by a summary of current assets and current liabilities, as in Figure 1. To show the *flow* in and out of the reservoir calls for another type of statement covering a period of time and showing (a) the sources from which working capital was obtained, and (b) the purposes for which working capital was used.

Figure 2 analyzes the $4,200 net increase in working capital during 1945 (shown in Figure 1) as the difference between total additions of $12,000 and total deductions of $7,800.

SUMMARY OF WORKING CAPITAL

	December 31, 1945	*December 31, 1944*	
Current assets:			
Cash	$ 3,000	$ 2,200	
Temporary investments	600	800	
Receivables	4,000	6,000	
Inventories	12,400	9,000	
Total current assets	$20,000	$18,000	
Current liabilities:			
Bank loans	$ 1,000	$ 3,000	
Notes payable	900	2,600	
Accounts payable	5,900	4,500	
Accrued liabilities	500	400	
Total current liabilities	$ 8,300	$10,500	
Working capital	$11,700	$ 7,500	
Net increase in working capital ($11,700—$7,500)			$4,200

FIGURE 1

FIRST AVENUE CORPORATION
NET INCREASE IN WORKING CAPITAL
YEAR ENDED DECEMBER 31, 1945

Additions to working capital:		
Net profit per income statement		$12,000
Deductions from working capital:		
Payment of cash dividend	$5,000	
Purchase of furniture	2,800	7,800
Net increase in working capital		$ 4,200

FIGURE 2

SECOND AVENUE CORPORATION
NET INCREASE IN WORKING CAPITAL
YEAR ENDED DECEMBER 31, 1945

Additions to working capital:		
From operations:		
Net profit per income statement	$ 8,000	
Add back depreciation of plant and equipment	7,000	
	$15,000	
Deduct amortizations of bond premium	200	
From operations		$14,800
Proceeds from sale of first mortgage bonds at 104		52,000
Total additions		$66,800
Deductions from working capital:		
Expended for plant and equipment		40,000
Net increase in working capital		$26,800

FIGURE 3

	Net profit transferred to earned surplus			*Working capital*	
	Increase	*Decrease*		*Increase*	*Decrease*
Sales	$ 40,000	$ —	Accounts receivable	$ 40,000	$ —
Cost of sales	—	21,000	Inventory	—	21,000
Expenses	—	7,000	Accounts payable	—	7,000
	$ 40,000	$ 28,000		$ 40,000	$ 28,000
	28,000			28,000	
Net profit	$ 12,000		Net increase	$ 12,000	

FIGURE 4

In Figure 2 and those following it is assumed that the net profit for a period as shown by the income statement is the same as the net profit transferred to the earned surplus account from the profit and loss account.

Profit and Loss Adjustments

Figure 3 above illustrates additions to working capital derived from (1) net profit from operations: (2) sale of first mortgage bonds.

	Net profit transferred to earned surplus			*Working capital*	
	Increase	*Decrease*		*Increase*	*Decrease*
Sales	$150,000	$ —	Accounts receivable	$150,000	$ —
Cost of sales	—	104,000	Inventory	—	104,000
Various expenses	—	31,200	Accounts payable	—	31,200
Depreciation (plant)*	—	7,000			
Amortization (bond premium)**	200				
	$150,200	$142,200		$150,000	$135,200
	142,200			135,200	
Net profit	$ 8,000		Net increase	$ 14,800	

* Credit is to reserve for depreciation account; hence working capital is not affected.
** Debit is to unamortized bond premium account; consequently working capital is not affected.

FIGURE 5

In Figure 2 working capital is increased by the exact amount of net profit transferred to the earned surplus account because each entry which affected net profit similarly affected working capital. Entries increasing sales increased accounts receivable (or cash); entries increasing cost of sales decreased inventory; entries increasing expense increased accounts payable (or decreased cash). Figure 4 illustrates this.

But in Figure 3 working capital is increased by $14,800 although the net profit transferred to earned surplus account is only $8,000. This $6,800 difference is due to entries recording depreciation and amortization which affect net profit but not working capital.

The amounts shown in Figure 5 for depreciation, amortization, and net profit transferred to earned surplus are obtained from analyses of the following ledger accounts:

RECLASSIFYING ENTRIES AND WORKSHEET

Changes in debits and credits appearing in a worksheet (as in Figure 3) are frequently *net* amounts, that is, reflect the differences between the debits and credits posted to ledger accounts during a period. The primary purpose of reclassifying entries is to set out as a separate item on the worksheet (reclassify) each amount making up the net amount. The information needed to prepare such entries is obtained from analyses of the accounts.

The reclassifying entries on the next page are for use in the worksheet in Figure 7.

These three entries (a) reclassify the $8,000 increase in earned surplus shown on line 16 of Figure 7, (b) adjust this increase for 1945 depreciation and amortization, and thus (c) set out net profit from operations, $14,800, as a separate amount on line 20 under working capital additions.

Analyses of the ledger accounts also

Reserve for depreciation—plant and equipment

1945		1945	
Dec. 31 Balance	$23,000	Jan. 1 Balance	$16,000
		Dec. 31 Depreciation	7,000
	$23,000		$23,000
		1946	
		Jan. 1 Balance	$23,000

Unamortized bond premium

1945		1945	
Dec. 31 Amortization	$ 200	Jan. 1 Premium on ten-year bonds	$ 2,000
31 Balance	1,800		
	$ 2,000		$ 2,000
		1946	
		Jan. 1 Balance	$ 1,800

Earned surplus

1945		1945	
Dec. 31 Balance	$19,000	Jan. 1 Balance	$11,000
		Dec. 31 Net profit	8,000
	$19,000		$19,000
		1946	
		Jan. 1 Balance	$19,000

FIGURE 6

(1)

Earned surplus	$8,000	
Net profit per income statement		$8,000

To set out net profit per income statement

(2)

Reserve for depreciation	$7,000	
Net profit per income statement (depreciation of plant and equipment)		$7,000

To increase net profit per income statement by amount of 1945 depreciation of plant and equipment

(3)

Net profit per income statement (amortization of bond premium)	$ 200	
Unamortized bond premium		200

To decrease net profit per income statement by amount of 1945 amortization of bond premium

show that proceeds (cash received) from sale of first mortgage bonds added $52,000 to working capital and that expenditures for plant and equipment reduced working capital $40,000. These facts could have been set out on the worksheet in Figure 7 as separate items by means of reclassifying entries. Clerical work is reduced, however, by extending directly to the last two columns the $40,000 increase in plant and equipment (line 9), the $50,000 increase in first mortgage bonds (line 13) and the $2,000 *total* bond premium ($1,800 plus $200 added by reclassifying entry (3) above) (line 14). In the statement prepared from the worksheet (Figure 3) these items are described fully.

Other Transactions

In preceding sections working capital was increased by (a) the proceeds from sale of bonds and (b) net profits from operation. Working capital was decreased by (a) payment of cash dividends and (b)

SECOND AVENUE CORPORATION
WORKSHEET ANALYZING NET INCREASE IN WORKING CAPITAL
YEAR ENDED DECEMBER 31, 1945

Line	Computation of working capital	Data from balance sheets		Changes in debits and credits		Reclassification of changes		Working capital	
		December 31, 1945	December 31, 1944	Dr.	Cr.	Dr.	Cr.	Deductions	Additions
1	Cash	$ 22,800	$ 6,000	$ —	$ —	$ —	$ —	$ —	$ —
2	Receivables	18,000	14,000	—	—	—	—	—	—
3	Inventories	24,000	9,000	—	—	—	—	—	—
4	Total current assets	$ 64,800	$ 29,000	—	—	—	—	—	—
5	Accounts payable	21,000	12,000	—	—	—	—	—	—
6	Working capital	$ 43,800	$ 17,000	—	—	—	—	—	—
7	*Debits*								
8	Working capital (as computed above)	$ 43,800	$ 17,000	26,800	—	—	—	(Bal.) 26,800	—
9	Plant and equipment	90,000	50,000	40,000	—	—	—	40,000	—
10	Total debits	$133,800	$ 67,000	—	—	—	—	—	—
11	*Credits*								
12	Reserve for depreciation	$ 23,000	$ 16,000	—	7,000	(2) 7,000	—	—	—
13	First mortgage bonds	50,000	—	—	50,000	—	—	—	50,000
14	Unamortized bond premium	1,800	—	—	1,800	—	(3) 200	—	2,000
15	Capital stock	40,000	40,000	—	—	—	—	—	—
16	Earned surplus	19,000	11,000	—	8,000	(1) 8,000	—	—	—
17	Total credits	$133,800	$ 67,000	$66,800	$66,800	—	—	—	—
18	*Reclassification*								
19	Net profit per income statement					—	(1) 8,000		
20	Depreciation of plant and equipment					—	(2) 7,000	—	14,800
21	Amortization of bond premium					(3) 200	—		
22						$15,200	$15,200	$66,800	$66,800

FIGURE 7

purchases of fixed assets. These transactions resulted in a net increase in working capital.

In this section (a) a net *loss* from operations exceeds (b) the proceeds from sales of capital stock, investments, and fixed assets, resulting in (c) a net *decrease* in working capital. The payment of a stock dividend is illustrated as an example of a transaction which does not affect working capital.

Comparative balance sheets of the Third Avenue Corporation show:

Assets	*December 31* 1945	1944
Current assets:		
Cash	$ 8,000	$ 15,000
Receivables less reserve	12,000	10,000
Inventories	12,000	18,000
Total current assets	$ 32,000	$ 43,000
Investments	—	6,000
Plant and equipment less reserve	99,000	113,000
	$131,000	$162,000
Liabilities and Capital		
Current liabilities:		
Accounts payable	$ 9,000	$ 16,000
Capital stock and surplus:		
Capital stock	114,000	100,000
Earned surplus	8,000	46,000
	$131,000	$162,000

FIGURE 8

The information below is obtained from the ledger accounts.

The data from the comparative balance sheets shown in Figure 8 are placed on the worksheet illustrated in Figure 9. Note that receivables are shown net on line 2 of the worksheet; that is, the reserve for bad debts is not shown as a separate item in the credits section. This reserve is a working capital account (deduction from receivables) and a change in the balance thereof affects only the computation of net change in working capital.

Changes in debits and credits are now extended and these worksheet columns

(1) Investments, book value $6,000, were sold in 1945 for $5,600 cash.

(2) Plant and equipment:		
Balance, December 31, 1944		$130,000
Deduct cost of old machinery sold in 1945 for $1,300 cash		3,000
Balance, December 31, 1945		$127,000
(3) Reserve for depreciation:		
Balance, December 31, 1944		$ 17,000
Add 1945 depreciation of plant and equipment		13,000
		$ 30,000
Deduct accrued depreciation of old machinery sold		2,000
Balance, December 31, 1945		$ 28,000
(4) Capital stock:		
Balance, December 31, 1944		$100,000
Add: Par value of stock sold in 1945 for $8,000 cash		9,000
Par value of stock issued in 1945 in payment of stock dividend		5,000
Balance, December 31, 1945		$114,000
(5) Earned surplus:		
Balance, December 31, 1944		$ 46,000
Deduct: Net loss in 1945	$32,000	
Discount on capital stock sold	1,000	
Stock dividend paid	5,000	38,000
Balance, December 31, 1945		$ 8,000

footed and balanced.

The next step is to prepare reclassifying entries which (a) reclassify net changes and (b) eliminate the effect of transactions which did not affect working capital. The first entry sets out as a separate item (Line 18) the net loss as shown by the income statement.

(1)

Net loss per income statement....	$32,000	
Earned surplus.....		$32,000
To set out net loss per income statement		

The second reclassifying entry reverses the entry made when the stock dividend was paid (debit earned surplus, $5,000, and credit capital stock, $5,000). Neither of these accounts is a working capital account, and hence the resultant changes in account balances do not affect working capital.

(2)

Capital stock.....	$ 5,000	
Earned surplus.....		$ 5,000
To reverse entry made when stock dividend was paid; working capital is not affected		

The third reclassifying entry reverses the entry made when the stock discount was recorded (debit earned surplus, $1,000, and credit capital stock, $1,000). This entry, similarly, does not affect working capital.

(3)

Capital stock.....	$ 1,000	
Earned surplus.....		$ 1,000
To reverse entry made when stock discount was recorded; working capital is not affected		

The entries above (a) reclassify the $38,000 change in earned surplus and (b) reduce the change in capital stock from $14,000 to $8,000—the amount of cash received from sale of capital stock. This reduced amount is extended as an addition to working capital.

The fourth reclassifying entry reverses the entry made to record the loss on sale of investments (debit profit and loss, $400, and credit investments, $400). This entry does not affect working capital, because neither account is a working capital account. The reversal (a) decreases the net loss per income statement (set out in entry (1)) by the amount of loss and (2) reduces the change in investments (line 9) from $6,000 to $5,600—the amount of cash received from sale of investments. This reduced amount is extended as an addition to working capital.

(4)

Investments.....	$ 400	
Net loss per income statement (loss on sale of investments)		$ 400
To decrease net loss per income statement by amount of loss on sale of investments (working capital is not affected) and to reduce $6,000 change in investments to amount of cash received from sale, $5,600		

The fifth reclassifying entry reverses the entry made to record 1945 depreciation (debit profit and loss, $13,000, and credit reserve for depreciation $13,000). Working capital is not affected by this entry because neither account is a working capital account.

(5)

Reserve for depreciation.....	$13,000	
Net loss per income statement (depreciation of plant and equipment).....		$13,000
To decrease net loss per income statement by amount of 1945 depreciation of plant and equipment; working capital is not affected		

The sixth and final reclassifying entry reverses the entry made to record the profit on sale of old machinery (debit reserve for depreciation, $2,000, credit plant and equipment, $1,700, and credit profit and loss, $300). Working capital is not affected by such an entry, because none of the accounts involved is a working capital account. This entry also (a) increases the net loss per income statement by the $300 profit on sale and (b) reduces the change in plant and equipment (line 10) from $3,000 to $1,300—the amount of cash received from sale. This reduced amount is extended as an addition to working capital.

THIRD AVENUE CORPORATION
WORKSHEET ANALYZING NET DECREASE IN WORKING CAPITAL
YEAR ENDED DECEMBER 31, 1945

Line	Computation of working capital	Data from balance sheets		Changes in debits and credits		Reclassification of changes		Working capital	
		December 31, 1945	December 31, 1944	Dr.	Cr.	Dr.	Cr.	Deductions	Additions
1	Cash	$ 8,000	$ 15,000	$ —	$ —	$ —	$ —	$ —	$ —
2	Receivables less reserve	12,000	10,000	—	—	—	—	—	—
3	Inventories	12,000	18,000	—	—	—	—	—	—
4	Total current assets	$ 32,000	$ 43,000	—	—	—	—	—	—
5	Accounts payable	9,000	16,000	—	—	—	—	—	—
6	Working capital	$ 23,000	$ 27,000	—	—	—	—	—	—
7	*Debits*								
8	Working capital (as computed above)	$ 23,000	$ 27,000	—	4,000	—	—	—	(Bal.) 4,000
9	Investments	—	6,000	—	6,000	(4) 400	—	—	5,600
10	Plant and equipment	127,000	130,000	—	3,000	(6) 1,700	—	—	1,300
11	Total debits	$150,000	$163,000	—	—	—	—	—	—
12	*Credits*								
13	Reserve for depreciation	$ 28,000	$ 17,000	—	11,000	(5) 13,000	(6) 2,000	—	—
14	Capital stock	114,000	100,000	—	14,000	(2) 5,000 (3) 1,000	—	—	8,000
							(1) 32,000		
15	Earned surplus	8,000	46,000	38,000	—	—	(2) 5,000 (3) 1,000	—	—
16	Total credits	$150,000	$163,000	$38,000	$38,000	—	—	—	—
17	*Reclassification*								
18	Net loss per income statement					(1) 32,000	—		
19	Loss on sale of investments					—	(4) 400	18,900	—
20	Depreciation of plant and equipment					—	(5) 13,000		
21	Profit on sale of old machinery					(6) 300	—		
22						$53,400	$53,400	$18,900	$18,900

FIGURE 9

THIRD AVENUE CORPORATION
NET DECREASE IN WORKING CAPITAL
YEAR ENDED DECEMBER 31, 1945

Additions to working capital:			
Proceeds from sale of capital stock (par value, $9,000)			$ 8,000
Proceeds from sale of investments (cost, $6,000)			5,600
Proceeds from sale of old machinery			1,300
Total additions			$14,900
Deductions from working capital:			
From operations:			
Net loss per income statement		$32,000	
Add back profit on sale of old machinery		300	
		$32,300	
Deduct:			
Depreciation of plant and equipment	$13,000		
Loss on sale of investments	400	13,400	
From operations			18,900
Net decrease in working capital			$ 4,000
The net decrease above is reflected in:			
Decrease in current assets:			
Decrease in cash		$ 7,000	
Decrease in inventories		6,000	
		$13,000	
Less increase in net receivables		2,000	
		$11,000	
Decrease in current liabilities (accounts payable)		7,000	
Net decrease as shown above			$ 4,000

FIGURE 10

	(6)	
Plant and equipment	$ 1,700	
Net loss per income statement (profit on sale of old machinery)	300	
Reserve for depreciation		$ 2,000
To increase net loss per income statement by amount of profit on sale of machinery and to reduce $3,000 change in plant and equipment to amount of cash received from sale, $1,300		

Note that entries (5) and (6) reclassify the $11,000 net change in reserve for depreciation (line 13).

It is immaterial in what sequence the changes in debits and credits are reclassified.

The reclassifying entries above are posted to the worksheet in Figure 9 which can now be extended and balanced. Figure 10 shows the results of the analysis in statement form.

A net change in working capital in a period may always be supported by a summary showing the net change in each working capital account, as shown in Fgure 10.

FUNDS STATEMENTS

Statements are frequently prepared headed "Sources and Applications of Funds," "Statement of Application of Funds," etc. Such statements differ but slightly from those previously discussed. Additions to working capital are designated "sources of funds" or "funds provided"; deductions from working capital are classified as "applications of funds" or "funds applied." Profit and loss adjustments are described as "noncash adjustments." Funds statements are commonly prepared in the form of an equation, that is, showing funds provided equalling funds applied. A net increase in working capital during a period is shown as funds applied; a net decrease is shown as funds provided.

Figure 11 recasts the data of Figure 3 into the form customarily used for funds statements.

Of the $66,800 total funds provided by operating at a profit and selling bonds, $40,000 was used to purchase plant and equipment, thus leaving $26,800 to increase working capital.

Figure 12 recasts in part the data of Figure 10.

The funds to cover the $18,900 operating loss were obtained by selling capital stock, investments, and old machinery for $14,900 and by decreasing working capital $4,000.

In Figures 11 and 12 the net change in

SECOND AVENUE CORPORATION
SOURCES AND APPLICATIONS OF FUNDS
YEAR ENDED DECEMBER 31, 1945

Sources of funds:		
Net profit from operations:		
From operations:		
Net profit per income statement	$ 8,000	
Add back depreciation of plant and equipment	7,000	
	$15,000	
Deduct amortization of bond premium	200	
From operations		$14,800
Proceeds from sale of first mortgage bonds at 104		52,000
Total funds provided		$66,800
Applications of funds:		
Expended for plant and equipment		$40,000
Net increase in working capital		26,800
Total funds applied		$66,800

FIGURE 11

THIRD AVENUE CORPORATION
STATEMENT OF APPLICATION OF FUNDS
YEAR ENDED DECEMBER 31, 1945

Funds provided:			
By sale of capital stock (par value, $9,000)			$ 8,000
By sale of investments (cost, $6,000)			5,600
By sale of old machinery			1,300
By net decrease in working capital			4,000
Total funds provided			$18,900
Funds applied:			
To cover operating loss:			
Net loss per income statement		$32,000	
Add back profit on sale of old machinery		300	
		$32,300	
Deduct:			
Depreciation of plant and equipment	$13,000		
Loss on sale of investments	400	13,400	
Operating loss			18,900
Total funds applied			$18,900

FIGURE 12

working capital could have been detailed below as shown in Figure 10.

PUBLISHED STATEMENTS

The following published statements further illustrate the variations in form and terminology existing in statements analyzing net changes in working capital.

Figure 13 was prepared by the Caterpillar Tractor Co. and shown in its 1945 annual report. This statement exhibits the source of (additions to) and the disposition

	Total from incorporation	*1945*
Source of working capital:		
Profit for period excluding amount received in settlement of patent litigation	$124,311,161	$ 6,511,895
Amount received in settlement of patent litigation less income tax thereon	3,600,000	3,600,000
Depreciation and amortization allocated to the period	48,703,715	4,575,801
Capital assets sold or scrapped, etc.	3,188,315	102,115
Common stock	9,632,183	—
Five-year convertible gold notes	10,000,000	—
Long-term notes payable to banks	5,000,000	—
	$204,435,374	$14,789,811
Disposition of working capital:		
Dividends paid:		
In cash	$ 76,134,191	$ 4,705,600
In preferred stock in 1936 and 1937 retired in 1938 and 1939	11,661,496	—
Land, buildings, machinery and equipment purchased	57,073,793	3,667,031
Five-year convertible gold notes paid	10,000,000	—
Long-term notes paid	5,000,000	—
	$159,869,480	$ 8,372,631
Increase (or decrease) in working capital during period	$ 44,565,894	$ 6,417,180
Working capital at beginning of period	7,550,353	45,699,067
Working capital at end of period	$ 52,116,247	$52,116,247

FIGURE 13

of (deductions from) working capital for the year 1945 and for the period from date of incorporation (1925) to December 31, 1945.

Figure 14 illustrates an analysis of the increase in working capital prepared by the United States Steel Corporation and Subsidiaries and shown in the 1945 annual report. Note the heading of the statement —"Summary of 1945 Financial Operations."

The comparative analysis of net change in working capital published in the 1945 annual report of United Stockyards Corporation is shown in Figure 15. This statement is headed: "Statement Of Application Of Funds." Additions to working capital are designated "sources of funds"; deductions from working capital are classified as "funds expended." Profit and loss adjustments are called "noncash charges to income."

The Eastman Kodak Company presents an analysis of net current assets (working capital) in its 1944 annual report (Fig. 16). Profit and loss adjustments are called "deductions from profits not representing cash outlay."

The net current assets of the Company increased $13,059,520 in 1944, as will be observed from the consolidated balance sheet. Changes are shown in detail.

A "summary of source and application of funds" is illustrated in the 1942 annual

SUMMARY OF 1945 FINANCIAL OPERATIONS
UNITED STATES STEEL CORPORATION AND SUBSIDIARIES

Additions to Working Capital			
Income			$ 58,015,056
Add: Wear and exhaustion of facilities (including additional amortization of $113,688,733 due to ending of emergency period)			237,109,650
Expenditures in prior years applicable to current costs			2,870,024
Proceeds from sales and salvage of plant and equipment			9,932,889
Total Additions			307,927,619
Deductions from Working Capital			
Expended for plant and equipment		$ 36,884,471	
Set aside for property additions		150,000,000	
Long-term debt retired		6,398,751	
Other deductions		3,204,643	
Dividends declared on preferred and common stocks		60,032,685	
Total Deductions			256,520,550
Increase in Working Capital			$ 51,407,069
This Increase is Accounted for as Follows			
Decrease in Current Liabilities			
Accrued taxes		$109,102,619	
Other current liabilities		11,767,620	
		120,870,239	
Decrease in Current Assets (*Deduct*)			
United States Government securities	$ 8,467,111		
Receivables	40,366,181		
Inventories	36,800,451		
	85,633,743		
Less: Increase in cash	16,170,573	69,463,170	
Increase in Working Capital			$ 51,407,069

FIGURE 14

STATEMENT OF APPLICATION OF FUNDS

	Year Ended October 31 1944	1945
Sources from which Your Corporation Derived Funds:		
Operations—		
Consolidated net income	$ 542,588.04	$ 404,458.79
Noncash charges to income—		
Depreciation	402,596.95	407,588.12
Loss on sales of property	—	74,748.71
	$ 945,184.99	$ 886,795.62
Sale of capital stock of the Union Stock Yards of Toronto, Limited	1,482,380.94	—
Sales of Butte Public Stockyards and nonoperating real estate	—	145,250.00
Other miscellaneous receipts	68,155.83	123,422.32
Total	$2,495,721.76	$1,155,467.94
How Funds Were Expended		
Retirement of bonds of the Corporation and its subsidiaries	$ 839,000.00	$ 226,000.00
Acquisition of 56,076 shares of preferred stock and 55,039 shares of common stock of the Corporation, held in treasury	—	883,099.64
Additions to property, plant and equipment	91,060.94	180,348.05
Acquisition of additional capital stock of Saint Joseph Stock Yards Company	—	50,044.82
Payment of dividends to stockholders of the Corporation—		
Preferred stock	305,200.00	275,760.10
Common stock	93,500.00	79,740.25
Total	$1,328,760.94	$1,694,992.86
Working capital increased (decreased*)	$1,166,960.82	$5 39,524.92*

* 1944 showed increase; 1945 showed decrease.

FIGURE 15

Increase in current assets, principally in government bonds		$19,084,296
Increase in current liabilities, principally in taxes		6,024,776
Increase in net current assets		$13,059,520
This increase in working capital was provided as follows:		
Profit for the year 1944		$23,031,310
Add:		
Deductions from profits not representing cash outlay:		
Provision for depreciation and amortization		13,433,164
Provision for possible inventory losses and other adjustments due to war-time operations		2,500,000
		$38,964,474
The funds thus available were used for:		
Dividends on capital stock	$14,607,017	
Additional investment in plant and equipment	8,193,674	
Additional postwar credit, United States excess-profits tax, less changes in other assets and reserves	3,104,263	
		25,904,954
Leaving a balance, representing the increase in net current assets		$13,059,520

FIGURE 16

report of National Dairy Products Corporation (Fig. 17). By including as sources or applications of funds the increases and decreases in various working capital accounts the statement analyzes the net increase in *cash* during the year.

SUMMARY OF SOURCE AND APPLICATION OF FUNDS
FOR YEAR ENDED DECEMBER 31, 1942

Source of Funds:	
Balance per statement of consolidated profit and loss transferred to earned surplus	$12,221,852
Provision for depreciation	9,233,488
Provision for possible future inventory adjustments and other contingencies	3,900,000
Receipts from liquidation of miscellaneous assets (net)	4,031,828
Increase in liability for Federal income and excess profits taxes	9,550,000
Increase in reserves for insurance, prior years' Federal and State taxes, etc.	714,601
Decrease in accounts and notes receivable (net)	2,979,593
Decrease in inventories (net)	4,927,840
Total	$47,559,202
Application of Funds:	
Dividends on common stock	$ 5,004,198
Purchase of property, plant and equipment	8,022,829
Funded debt retired	2,034,000
Loans paid off	11,717,988
Decrease in liabilities for accounts payable and sundry accruals	268,503
Purchase of U. S. Treasury tax notes, Series C	18,500,000
Total	$45,547,518
Increase in Cash	$ 2,011,684

FIGURE 17

COLLEGE EDUCATION AS A REQUIREMENT FOR PUBLIC ACCOUNTANTS IN NEW YORK STATE

RAYMOND G. ANKERS

THE TITLE of this paper, "College Education as a Requirement for Public Accountants in New York State," is rather ambiguous. It suggests that all public accountants practicing in New York must meet certain scholastic requirements. Of course, this is not true. There is no law in New York State restricting the practice of public accounting to certified public accountants. The college education requirement mentioned in the title refers to the New York CPA law which became effective January 1, 1938.

This law specifies that candidates for the examination leading to certification must be graduates of colleges or schools of accountancy registered by the State Education Department as maintaining satisfactory standards. To meet satisfactory standards, a school must offer a four-year course, or its equivalent, in cultural and business subjects including 24 hours of accounting, 8 hours each of business law and finance, and 6 hours of economics.

This law, which for the first time set minimum scholastic requirements at college level, did not become effective until January 1, 1938, but it should be noted that the legislation putting it on the books was enacted several years earlier. Because of the broad implications of this law, the effect of its enactment was not limited to New York State. Without question, it had a profound effect upon the employment

policies and practices of public accounting firms throughout the country. It also set a criterion for an accounting major which many schools throughout the country considered it expedient to follow.

I do not mean to imply that prior to the enactment of this legislation public accounting firms did not favor college graduates when employing men for their staffs—as a matter of fact, they did. For many years it had been the practice of a number of firms to employ college graduates almost exclusively. However, before the passage of the New York State law, there was less uniformity in the scholastic backgrounds of men employed by public accounting firms. For example, some graduates had majored in accounting, whereas others had little, if any, technical training to fit them for the public accounting field. Why did public accountants employ men with such diversified backgrounds? They had little choice. They knew they needed well-educated men but found only a limited supply of high-grade accounting majors who intended to make public accounting a career. The supply was far short of the demand.

However, after the enactment of the New York State CPA law the supply of accounting majors who indicated an interest in public accounting increased. It seems that the college education requirement as a prerequisite to becoming a CPA gave public accounting more prestige in the minds of students and made them more conscious of the opportunities existing in this field of endeavor.

The law was of assistance to practitioner employers in another way. It provided a yardstick by which they could gauge the adequacy of the technical training of applicants. As you know, most public accountants are not educators—therefore, they probably had some difficulty in evaluating the scholastic records presented to them by applicants. Subsequent to the enactment of the law, employers could refer to the list of schools registered by New York State to determine whether the applicant had met certain minimum requirements.

Why do public accounting firms consider college graduates with an accounting major as best qualified to enter the public accounting field? To answer this question, let us review the experience practitioners had in training graduates who lacked accounting knowledge. In the first place, as a condition of employment these graduates agreed to study accounting and related subjects at night schools or by correspondence. Then, after a short indoctrination period in the office of their employer these beginners were assigned to accounting engagements. Obviously, for many months they were used only on routine work requiring little or no accounting knowledge. Furthermore, their work was performed under close supervision. Later, as they gained technical knowledge and skill, they were gradually given more responsibility. Their progress was slow for several years, but today many of these men hold high positions both in public accounting and in the business world.

For the most part, practitioners were satisfied with the results obtained in developing these beginners. However, for two important reasons they did not wish to continue this practice. First, men without necessary technical knowledge took too long to develop. For example, college graduates with little or no training in accounting and related subjects required approximately four years to progress to the rank of semi-senior accountant, whereas graduates who had majored in accounting advanced to the same rank in about one-half that time. The other reason is that public accounting firms were and still are reluctant to use beginners without accounting knowledge in clients' offices on even the most routine work.

What I have said about college graduates with accounting majors as being the most desirable applicants because of their technical background raises another question. Why are not men who have had specialized training in accounting and related subjects but lack a complete college education considered adequate? Surely men with good accounting training can be sent to clients' offices in the capacity of junior assistants, make a creditable showing, and cause their employers no embarrassment. Although this may be true, to progressive employers it is not enough. Employers set their sights on the future—they want to take all steps possible to satisfy themselves that today's beginners have those qualities necessary to become top seniors, supervisors, or members of their firms. Having this point of view, employers look for men with a liberal education in addition to an accounting specialization. The kind of men they seek should possess keener perception, better judgment, and a sounder understanding of human relationships than men trained along narrower lines.

I do not mean to intimate that a liberal college education is an open-sesame to these characteristics, nor do I mean to infer that men without benefit of this liberal education could not acquire these characteristics. There are a number of men at the top of our profession today who do not possess college degrees but, in most cases, these are men who have grown with the profession or who are exceptional and would probably attain a high position in whatever field of endeavor they attempted.

Now let us move to another question. Are employers satisfied with the training received by graduates of those schools throughout the country which meet the New York State educational requirement? The answer to this question is a qualified "yes." I believe that employers are very well pleased with the accounting knowledge and general background obtained by these graduates. However, most practitioners find them to be inadequately prepared in auditing and woefully deficient in the use of English, both oral and written.

These weaknesses have been discussed at some length at the last two joint meetings of the Committees on Education of the American Institute of Accountants and of the American Accounting Association. This subject has also had the serious consideration of the Committee on Education of the New York State Society of Certified Public Accountants. It appears to be the consensus of those with whom I have talked that the weakness in auditing is the result of insufficient time spent on instruction in auditing fundamentals and, probably in some instances, a lack of practical knowledge on the part of instructors in the application of auditing principles. It seems doubtful that adequate auditing instruction can be given in the usual four hours allotted to this subject.

The deficiency in the use of English is not primarily the responsibility of colleges. Colleges, it would seem, are responsible only because they enroll students who are so deficient in the use of English that the deficiency cannot be overcome within a period of four years. I understand that some colleges are stiffening their entrance requirements in an endeavor to correct this condition. It is possible that colleges could do more in cultivating the proper use of English, both written and oral, if the subject were treated as important in every class as it is in English classes.

Earlier in my talk I mentioned that before the passage of the New York State CPA law there was only a limited supply of high-grade accounting majors who were interested in public accounting as a career. Within the next few years I believe there will be a complete reversal of this condition. The change will be brought about by the relatively large number of war veterans

who are apparently interested in public accounting.

As nearly as I have been able to determine, many veterans chose this vocation while still in military service because of one or more of the following reasons:

(1) The itinerant nature of the work appealed to them.
(2) They were impressed by the evident need for accountants during the war and the consequent opportunities open to service men having accounting knowledge to obtain commissions or "soft" jobs.
(3) The result of so-called aptitude tests and advice of so-called vocational experts.
(4) They held minor positions as bookkeepers and clerks before the war. Now they want to better their positions. The G.I. Bill gives them the opportunity to study accounting at government expense.

I fear that many veterans have been ill-advised in choosing the public accounting field and that others will fall qy the wayside when they learn that public accounting is not a "soft" job. But there will be many who are peculiarly well fitted for public accounting. I sincerely hope the vocational departments of colleges will carefully screen veterans to determine their qualifications and I also hope that those who do the screening will not select introverts as fitted for public accounting work.

In talking with veterans, I find that most of them know they will require a college education to succeed in public accounting. Of course, most of the veterans I talk with are from New York State, and accordingly they would expect to meet the requirements of the CPA law of their home state. However, the unusually large enrolments in accounting departments of colleges indicate a general acceptance of a college education as a prerequisite to entering the public accounting field. With the acceptance of the need for this educational background by so many practitioners and by young people who plan to enter the profession, is it not surprising that only New York State has a four-year college level educational requirement?

Probably we should not be too surprised. The accounting profession in this country is only fifty years old and I believe it can be justifiably proud of the progress it has made during this relatively short period. Furthermore, the teaching profession is entitled to share in the credit for this progress. Certainly, without continued cooperation and energetic effort on the part of members of accounting departments of colleges and schools of business administration this rapid progress could not have been made.

The New York State CPA law, with its present educational requirement, has been effective for only ten years. In this short time it has been a potent influence in increasing the prestige of the profession and in elevating the educational level of practicing accountants—not only in New York State, but in all the states.

COLLEGE EDUCATION AS A REQUIREMENT FOR CERTIFIED PUBLIC ACCOUNTANTS—THE NEW YORK EXPERIENCE

NORMAN E. WEBSTER

THIS IS the second occasion when I have been honored with an invitation to appear upon the platform of this Association. The other was at the Atlantic City meeting in December, 1937. That was less than one week before the effective date of Section 1498-a of the New York CPA Law of 1929. By reference to ACCOUNTING REVIEW, I find that the subject of my paper was "Higher Education for Public Accountants." For this meeting I am asked to write upon the subject, "College Education as a Requirement for Certified Public Accountants—The New York Experience."

Inasmuch as both subjects relate to education for accountants it may be appropriate for me to detail to you all my qualifications for these assignments even though modesty might suggest that I leave that to others. But modesty is not my outstanding characteristic.

During all 16 weeks of the fall term in a small-town school in Michigan when I was 12 years old, I studied a book by Ira Mayhew, A.M.—*A Practical System of Bookkeeping*, which was first published in 1851. That recital covers all of my formal schooling in this subject and with it you will better understand the weight you should give to what follows.

If with this paper I put you to sleep or empty your chairs it will not be with a mass of statistics, even though it is with figures that an accountant does a large part of his work. However, statistics related to this subject have been compiled and presented in two documents and as I shall refer to them perhaps I should mention them now. They are:—"The Administration of the CPA Law in New York State" by Harlan H. Horner, Assistant Commissioner for Higher Education in New York State, which was printed in the *New York Certified Public Accountant* of January, 1935, Vol. 5, pages 32–56; "Analysis of Candidates Admitted to the CPA Examinations since Jan. 1, 1938" by Eckes & Dean, CPA's, in Report of May 15, 1944, 10 pages 13″×9″ and 10 pages 13″×14″.

Both authors were well prepared to make these studies. Dr. Horner came to New York in 1904 with the new Commissioner of Education, Dr. Andrew S. Draper, president of the University of Illinois, where an early interest in education for business and accountancy was further promoted by its next president, Edmund J. James. And during most of his service in New York Dr. Horner had been in charge of or closely associated with the matters of education and examinations for all the professions. And Walter N. Dean, B.C.S. at New York University School of Commerce in 1910, CPA 415 of New York in 1913, in public practice as a principal during over 30 years, and for a time a teacher at St. Johns University School of Commerce, has been Secretary of the New York Board of CPA Examiners since July, 1930, and more recently Secretary and now President of the Association of Certified Public Accountant Examiners, in which the Examiners of all States and the American Institute hold membership.

The first of these studies was prepared for an address before the State Society and covered 75 examinations from December 15, 1896, to October 1, 1934, with a more detailed study of the 10 examinations during the last 5 years of that period. The second study was made at the request of the State Education Department and paid for by the State Society. It brought down to June 30, 1943, the statistics in the earlier study; and for the 5 years from January, 1938, to April, 1943, it presented an analysis of the education and examination results of 2,011 out of the 3,302 candidates who were admitted to the examinations during that period.

As to the candidates analyzed or omitted the Report stated:—"The number analyzed covered 90 per cent of the candidates admitted prior to October, 1941, and, for the most part, the ones not included in the analysis could have taken no more than one, two or three examinations. In all probability, the inclusion of 1,300 more candidates would not materially change the percentages shown in these exhibits, and with the prevailing uncertainties of war and Selective Service in 1942 and 1943 the earlier years reflect more normal conditions."

Perhaps this is a good place to note that the Report shows that during the 47 years from April 17, 1896, to June 30, 1943, the New York State Board of CPA Examiners rated the Answer Papers of 53,142 candidates—which number of course includes the several trials of many candidates. The failures totaled 42,839 or 80.6 per cent, and of the 10,303 candidates who were passed, or 19.4 per cent, certificates were then issued to 9,324 candidates who had the required experience. Quite likely you know that New York examines about one-third of all the candidates in the United States.

Besides the 9,324 certificates issued upon examination to June 30, 1943, 183 certificates were issued during the first few years under the waiver provision of the original Law, and after July 1918, 655 certificates of other states were indorsed by New York. No doubt you all know that such indorsement is not limited to reciprocal action by the other states. New York does not require reciprocity for its indorsement. After three years of the public practice of accountancy in any state or states, either as principal or staff accountant, and with residence or place for the regular transaction of business in New York State, New York will indorse the certificate of any state whose requirements at the date of the issuance of its certificate were equal to those of New York at the same date.

The subject assigned to me included the phrase "The New York Experience," which, of course, referred to "College Education as a Requirement for Certified Public Accountants." What I can tell you as to the experience of the candidates must necessarily be almost wholly objective. And for that perhaps it may be instructive to consider the candidates' results in examinations both before and after the introduction of the requirement of completion of a 4-year course in a college or school of accountancy. You know of course that the New York law does not require a degree. While such courses of study in most institutions lead to degrees, some do not. Perhaps degrees mean more to educators than to accountants, who almost never mention their degrees except in connection with their technical authorship; some omit them even in those cases.

In my 1937 paper I presented some statistics from the study by Dr. Horner of the 5 years 1929–1934 which showed that, of 7,371 candidates, 604 (8.2 %), college-trained men and 6,767 (91.8%), high school, out of each group in a single examination—not always their first—4 per cent passed all 4 subjects, 14 per cent passed 3 subjects and 12 per cent passed 2

subjects—making 30 per cent of each group who received some credit, while 26 per cent of the college men and 28 per cent of the others passed only one subject. But Mr. Dean's analysis of the 5 years 1938–1942 showed that of 2,011 candidates, all college graduates, in their first examination 320 (15.9%) passed all 4 subjects, 323 (16.1%) passed 3 subjects, and 646 (32.2%) passed 2 subjects, making nearly 62.2 per cent who received some credit. This suggests that the college graduates in the 1938–1942 examinations were much better prepared than the college men in the 1929–1934 examinations. However, the results during these two 5-year periods would not be fully comparable if there was a marked difference in the difficulty of the examination questions or in the severity of the ratings in the two periods. Perhaps that may not be of importance because after May, 1930, there were only two changes in the personnel of the New York Board of CPA Examiners.

Before leaving this discussion of the experience of candidates under the College Education Requirement, I shall insert here some statistics as to the examination results of 700 candidates admitted during the year 1934 and a comparison with the similar results of the 2,011 candidates admitted during the 5 years 1938–1942 whose records were analyzed in the Dean report. If the 6 examinations taken by the 700 candidates admitted in 1934 and the 10 examinations taken by the 2,011 candidates admitted during 1938–1942 were fairly comparable as to difficulty, and if the ratings given to their answer papers were correspondingly fair (I say "if" because I participated in the preparation of the questions and in the individual and collective consideration of the ratings thereon), then the 1938–1942 candidates had better staying power because 195, or 9.7 per cent, remained after 4 examinations

Exam. No.	*700 Candidates Admitted 1934*			*2,011 Candidates Admitted 1938/42*		
	Persons Taking	*Passed 4 Subjects*	*Dropped Out*	*Persons Sitting*	*Passed 4 Subjects*	*Dropped Out*
1	700	29	232	2,011	320	337
2	439	46	217	1,354	341	264
3	176	31	93	749	200	141
4	52	19	32	408	128	85
5	1	—	—	195	77	29
6	1	1	—	89	31	19
7	—	—	—	39	18	10
8	—	—	—	11	4	3
9	—	—	—	4	4	—
Attempts	1,369			4,860		
Persons	700	126	574	2,011	1,123	888
%		18.0	82.0		55.8	44.2

Before leaving this discussion of the experience of candidates under the College Education Requirement, I shall insert here some statistics as to the examination results of 700 candidates admitted during the year 1934 and a comparison with the similar results of the 2,011 candidates admitted during the 5 years 1938–1942 whose records were analyzed in the Dean report. If the 6 examinations taken by the 700 candidates admitted in 1934 and the 10 examinations taken by the 2,011 candidates admitted during 1938–1942 were fairly comparable as to difficulty, and if the ratings given to their answer papers were correspondingly fair (I say "if" because I participated in the preparation of the questions and in the individual and collective consideration of the ratings thereon), then the 1938–1942 candidates had better staying power because 195, or 9.7 per cent, remained after 4 examinations—of whom 134 finally passed on their 5th to 9th attempt while only 1 of the 1934 candidates kept on after his 4th examination. However, this is not a comparison of college men only, because the 700 candidates in 1934 included a large number, probably much over one-half, who had not gone beyond high school. But for a consideration of the results of their education perhaps only the first or first two examinations should be taken because a large proportion of those who failed at first prepared for further attempts in coaching courses or by self-instruction.

Turning to the experience of the Examiners I am somewhat better informed. For the 100 examinations during the 50

years 1896 to 1945 the New York State Board of CPA Examiners prepared its own questions. This is true although for the last 3 years the questions in Commercial Law were the same as those in the Uniform CPA Examinations prepared by the Board of Examiners of the American Institute for the states which used its service. The use of the same questions in that one subject resulted from the fact that, having that subject for the New York Board and being one of the two members of the Institute Board that prepared the Law questions for the Uniform Examination, I economized in time and effort by using questions with which I was satisfied for both examinations.

In passing let me call your attention to the fact that the American Institute of Accountants does not give examinations and has not done so for about ten years. There is no Institute examination even though that expression is heard too frequently. In confirmation of this statement I refer you to the editorial on page 91 of the February, 1946, issue of the *Journal of Accountancy*. And even though for 1946, at least, New York will use the questions of the Uniform Examination it will still be one for which our Board assumes responsibility.

As to the severity of the examinations in New York State the New York Board has considered that it should be set for the level of semi-seniors although the Institute Board at least for a time felt that it should be set for senior accountants. And as to the reasonableness of the ratings, the practice of the New York Board has been that the original or tentative ratings should be rather strict or severe so that when the Board met to compare ratings on the 5 papers in 4 subjects it might consider good marks in one or more subjects as a basis for raising to the passing mark of 75 the rating on some subject so as to give a candidate as much credit as possible. And when a candidate requests a review of his rating in some subject (formerly allowable on ratings of 60 but now only on 65) the Board considers his ratings in that subject in all prior examinations.

As to the candidates' educational preparation for the examinations, I should think that the results in their first examination would be a fair measure of the quality and quantity of the instruction which they had received—if, but only if, all other conditions were equal which, of course, they were not and could not be. The 2,011 candidates admitted from January 1, 1938, to April 1, 1943, came from 55 schools, of which 27 schools furnished only 34 candidates. Of the other 1,977 candidates, 1,797 came from 13 schools in New York State, 693 to 4 each; and 180 came from 15 schools in other states, 47 to 4 each. Many of these 180 had been suggested to, and interviewed and engaged by, representatives of New York firms. Probably they were from the groups of high-ranking students in their schools. On the other hand, the 1,797 from 13 New York State schools probably were from all ranks in those schools, top, middle, and bottom. If these surmises were correct, I expected that the candidates from other states would show better in their first examinations than those from New York State schools.

That proved to be the fact. Of the 1,797 candidates from 13 New York schools 277 (15.4%) passed their first examination, and of the 180 from schools in other states 38 (21.1%) passed. But individual schools did not conform to that pattern. They showed some striking variations. The highest result, 50 per cent, was from another state school with 2 passed of 4. The next highest, 37.5 per cent, was shared by one other state with 3 passed of 8 and by one New York school, with 10 times the candidates, with 30 passed of 80. The next 3 groups were first, one other-state school, 33.3 per cent with 2

passed of 6; second, two other-state schools each with 2 passed of 8, and one other-state and one New York State school, each with 1 passed of 4, 25 per cent in each of 4 schools; and third, one other-state school with the second largest list, 23.5 per cent for 8 passed of 34. But the next highest, 22.2 per cent, was a surprise to me because it was the New York school with the largest group of candidates with 154 passed of 693. Then the next highest, 21.3 per cent, was one other-state school with 10 passed of 47. The percentages of 10 other New York schools and of 7 schools in other states ranged from 20 per cent down to 0 from one New York and one other-state schools who had only 4 and 6 candidates in the examination.

This study of the examination results of 180 candidates from 15 schools in other states and of 10 times as many from New York State schools convinces me that students who have spent 4 years in the day classes or 6 years in the evening classes in the schools have been exposed to a quantity and quality of instruction which should have prepared them for the examinations in Commercial Law, Theory of Accounts, and the theoretical parts of Auditing. I never have believed that schools were or could be prepared to teach successfully the subject of Practical Accounting or the practical part of Auditing.

Recent developments have only strengthened this opinion. During many years when candidates in New York were permitted to take all four subjects when they had the educational requirement and one year of experience in simple accounting or bookkeeping, the failures in Practical Accounting far outnumbered those in any of the other three subjects. A few years ago the New York rules were changed to require that before a candidate would be admitted to the examination in Practical Accounting he must have had, besides the other qualifications, two years' experience in public practice in the employ of a CPA. This change did not affect the other three subjects. The result has been that the failures in this subject have been reduced and now are much fewer than those in Auditing. I expect that in the future Auditing will be divided into its Theory and its Practice and that CPA experience will be required before a candidate is admitted to sit for Auditing Practice.

I do not wish to belittle the efforts of the schools in their attempts to teach Practical Accounting and Practical Auditing by means of laboratory work. But the situations and transactions which they are able to put before their students in the laboratories are those which have arisen in CPA offices years before, whereas many such offices are confronted with novel situations at least once a year and usually much more often. Without denying the importance of school work for the beginner, experience in practice is even more essential.

As I have indicated, I believe that the experience of the New York State Board of CPA Examiners has demonstrated the value of college education as a requirement for Certified Public Accountants. Instead of a 50-50 apportionment between liberal arts and technical subjects, I would have preferred 60-40 or even 75-25. If accountancy is a trade only, we should cut out the cultural subjects to save time. But if it is a profession, then practitioners should be educated men. However, since New York has started out with 50-50 apportionment of a 4-year course, I do not advocate a change in that proportion for the present. But when the courses are to be lengthened I hope that the change will be by the addition of at first one year, later two years, to the fundamentals, English, History, Science, perhaps Languages.

Thus far I believe I have not criticized the schools. But I can and shall. In so far as I know, they are using good tools

and wise methods. However, it must be that their inspection of the materials on which they work is lax or non-existent. Manufacturers do not accept their vendors' assurances of the quality of the raw materials they purchase without inspection and tests of the materials. If any should do so the buying public would soon be rejecting the manufacturers' products just as the CPA Examiners are rejecting too large a proportion of the product of the colleges and schools of accountancy.

A high school diploma does not insure that the holder has satisfactorily completed a 4-year course in that school. The New York State Board could give you many illustrations but I have time only for citation from two letters from one college graduate. Both letters contained a word spelled p-r-i-v-a-l-a-g-e. One also had these spellings s-u-f-f-i-e-n-t and g-r-a-t-i-o-u-s-l-y. And one had e-x-p-e-d-i-a-t-e while the other simplified it to e-x-p-i-d-i-t-e. Bad grammar, big words where they do not belong, inability to read or understand what they read. Unless the schools will do the necessary screening, the Examiners must continue to do so.

THE ACCOUNTING EXCHANGE

A. C. LITTLETON

TWO PAPERS in the July ACCOUNTING REVIEW were originally presented before the May meeting of the American Association of Collegiate Schools of Business. They were "The Public Accountant of Today and Tomorrow," by John W. Queenan, and "Education for Public Accounting on the Collegiate Level," by Dean H. T. Scovill.

In the discussion that followed the presentation of the papers, Professor W. A. Paton considered the topic treated by Dean Scovill and later made his remarks available for use here.

"*Qualifications of Trainees.* As Dean Scovill has pointed out, the end product of our accounting training programs depends even more on the quality of the student body than on the character of the training itself. No one has yet found the formula for converting a sow's ear into a silk purse. It is therefore of the utmost importance that the opportunities for professional careers in public accounting be brought to the attention of competent young people, at the high school as well as at the college level. The *Journal of Accountancy* and the ACCOUNTING REVIEW should be on the periodical list of every high school library, and copies of the pamphlet *Public Accounting as a Career* should also be available to high school seniors. The advisers of students both in high school and college are generally less familiar with the field of public accounting, and the unusual professional opportunities therein, than with law, medicine, and engineering, and every reasonable effort should be made to correct this situation. In view of the shortage of highly qualified accountants it is important that an increasing flow of first-rate material be attracted to this field.

"*Foundation Courses.* There are two main processes in which human minds are engaged: (1) that of collecting, measuring, arraying data related to some activity, objective, or phenomenon; (2) that of communicating to others the results of measuring and arraying, usually with the hope of affecting the thought pattern of the person or group to whom we are endeavoring to transmit ideas. These processes are prominent in accounting; in fact, *measurement* and *transmission* are the very essence of the activity of the accountant. The course of study of the prospective accountant should accordingly be heavily loaded with courses that stress these processes. The most important examples are mathematics and statistics, on the one hand, and English composition, written and oral, on the other. Physics is excellent on both counts, and another good choice—if one has any interest in the field—is music. I'll go a bit further and say that in my judgment courses that haven't at least a strong tinge of either measurement or communication are suspect in any curriculum, for any purpose, at the collegel level or elsewhere.

"Today many persons attempting to enter the field of public accounting upon graduation from college are arithmetically and linguistically illiterate, and thus have two strikes on them at the outset. Part of the difficulty is that we let a lot of folks filter through the educational sieve who have no business to be contemplating a professional career. However, a part of the trouble lies in the educational process itself in that the curriculum is often filled with a lot of sloppy stuff which has negligible value in developing intellectual power —and may even be a detriment—and thoroughgoing, disciplinary training in

mathematics, English, and other subjects stressing measurement and communication is minimized.

"*Collateral Courses:* It almost goes without saying that the student preparing for a career in public accounting should take work in economics (unless the only courses available are of the muddy, emotional, newspaper-headline variety). The accountant must deal with a wide range of business transactions and situations, and familiarity with the structure of the economic system and the underlying price-making processes is essential if his work is to reach a high plane of effectiveness.

"With respect to other business subjects I am a conservative. I am not convinced that a mass of courses in marketing, personnel, management, etc., is a desirable feature of the program of training of the prospective professional accountant. The basic courses in business finance and law should of course be included. Throughout the professional part of the program, as well as at the foundation level, space should be left for further work in English, history, and economic theory, and this isn't possible if the required curriculum is loaded with 'commerce' courses. It should not be forgotten that accounting cuts across substantially all phases of business activity and that the accounting courses themselves accordingly provide a considerable training in business organization and operation.

"In commenting briefly on foundation and collateral work I have avoided the use of the hackneyed term 'cultural.' In my opinion this term has been applied in an uncritical manner to furnish support for a lot of college courses of very doubtful value to any student. One of the silliest things we do is consume student hours in superficial study of elementary foreign language, when most of the people taking such work are so poorly prepared in English grammar and composition as to be almost illiterate. Any subject is 'cultural' if it deals systematically with the problem of furnishing sound understanding of our environment and our relations to each other and to our surroundings at points where such understanding is not likely to be acquired without systematic training. In this sense accounting ranks high on the list of 'cultural' subject matter.

"*Accounting Courses.* There are many different ways of organizing the training in accounting and it is probably a good thing that not all schools are using the same methods. Continued experimentation and change seem desirable. In the underlying courses we are probably on the right track in stressing income determination and periodic financial reporting to management and owners as major objectives. Work in cost measurement, tax accounting, auditing, and C.P.A. problem review is standard in all curricula in which a serious effort is being made to furnish professional training. There is less agreement as to the stress to be laid on accounting 'systems,' internal control, statement analysis, etc., as centers of interest in organizing the program. Among specialized fields governmental accounting has won a place, and there is something to be said for particular consideration of utility accounting problems. Development of courses in retail accounting, mine accounting, etc., is probably not desirable in most schools; once this sort of expansion of curriculum is started we are well on the road to useless elaboration and repetition. Something must be left for the school of experience and some things are learned better there than elsewhere.

"The extent of the program of accounting work is of course debatable, but when we get beyond around twenty-four semester hours, at the undergraduate level, the burden of proof is on the expansionist. A good job done in a modest number of courses is preferable to a flock of milk-and-

water courses. In this connection I'd like to say that I believe the competence of the staff doing the teaching is a much more important matter than any question of course titles or number of courses.

"*Field Training.* I believe that the possibilities of integrated programs of field and classroom training have not yet been fully explored and developed. In this connection I would like to see a number of schools, in cooperation with leading firms of public accountants, work out arrangements for internships of at least one semester during the student's over-all program. This period of practical training should be fully controlled, formally elected like any other part of the program, and probably should carry definite credit toward graduation. From the standpoint of the accounting firm the plan should not be thought of primarily as a means of getting some cheap help during the rush season. Instead the firm should consider itself as being drawn into the educational process—as furnishing laboratory facilities for the training of promising candidates for the profession. From this point of view the summer period might well prove to be better than the winter season as a time for such field training. A slack period in production is always a good time to restore plant facilities to first-class condition, and such a period may also be used to advantage for training personnel.

"This brief comment is intended to be only suggestive; there are many problems involved in developing good field training cooperatively."

* * *

Toward a Broad Course. Everyone is enthusiastic for his own specialty; and he tends to see in it broad reaches of usefulness that seem to give it universality. Thus an accountant can see that everyone has need of some knowledge of accountancy. But, he would be the first to add, not a knowledge of accounting as a technology.

If accounting is to be presented educationally other than as the technology that it is, how is this to be done? Can accounting be stripped of its techniques and still leave an adequate basis for understanding its functions and achievements? It is like asking whether the only avenue to understanding music and painting is that of learning the technique of brush and bow.

Professional accountants often see evidence of the need in various groups of laymen for an understanding of accounting; and teachers often wish they could teach it to lawyers, engineers, economists, and statisticians. But there are difficulties. Students, teachers, and practitioners in all professions know of many special areas in their own special fields that they have no time to cultivate, to say nothing of browsing through a "foreign" subject. They know or suspect that accounting is usually taught as a specialty, that instruction is focused toward business or professional accounting. Undoubtedly these "laymen" would not be interested until accounting instruction was stripped of its "know-how" approach; until the focus had been changed from bookkeeping, auditing, and CPA problems.

Can accounting be presented in the same framework to technicians and laymen? If it can, extensive changes will need to be made in elementary courses so that the can be terminal for some and introductory for others. Perhaps a model can be found in the typical first course in the principles of economics. On the other hand, a broad course in economic principles may itself be considered by some economists as more terminal in effect than introductory. If the same framework of accounting instruction will not suffice for all types of students, separate courses with sharply different subject matter are indicated. In that case remodeling the usual elementary course will not be enough; compressing the pro-

cedures of several existing courses probably would still leave the emphasis on procedure. What will be needed is a fresh point of view: a new appraisal of the objectives of instruction; a clear awareness of the layman's center of interest and of the accounting matters likely to be confusing to him which therefore need explanation.

The topic deserves wide discussion, especially in regard to teaching methods and the prerequisites of such a course. What follows is one point of view about content. The ACCOUNTING REVIEW will be glad to publish other ideas on content or on related aspects of the subject.

If the techniques of bookkeeping, cost accounting, auditing, and CPA problems are ruled out of the course, the principal aspects of accounting which remain are financial statements and accounting theory. Here is enough subject matter to satisfy almost any plan. But there are some questions. Can statements be presented without considering the procedures that lead up to financial statement construction? Can theory be understandably presented without being focused upon bookkeeping journal entries that express transactions technically, or upon the "good accounting practices" that form the technical basis of the auditor's judgment of items in the financial statement?

Some good discussions could come out of questions like these. In the meantime what can be said about making financial statements the central theme of such a course? And for drawing upon theory wherever it would contribute without confusion to the broad understanding of accounting that is the objective of the course?

It would seem that a study of the financial statements of a variety of different kinds of enterprises need not be technical, and could contribute a good deal to an understanding of business. Some of the reasons why this approach might be desirable are that it would tend to stress the differences among enterprises, and that it would open the way for constantly referring to the way accounting performs useful services for different people. If there is no grasp of the nature and function of business, and of business enterprises, there can be no effective understanding of accounting. And if there are groups of laymen who could benefit from a concise understanding of accounting, they could also benefit from a deeper understanding of business. Possibly the most important contribution such a course could make would be from using the study of accounting as an avenue to understanding business.

It might be a workable plan to organize the course in two parts. The first would be designed to give an understanding of what accounting means to each kind of enterprise in turn. The second would deal with the limitations of financial statements in general. In a sense this plan would show what a financial statement (and hence accounting) is and is not. If the important features of these two aspects of accounting can be made clear and convincing in this way, the course would serve a very useful purpose indeed.

There are many ways of arranging a discussion of the financial statements of each type of enterprise. But for each one, with varying emphasis as needed, it would seem useful to include these topics somewhere.

The meaning of the principal items in the statements, probably beginning with the income statement and explaining the balance sheet as a "capital statement."

The effect on statement items of the principal transactions typical of that enterprise, especially the effect on four categories: revenues, expenses, assets, liabilities.

The nature of the enterprise in question, its social service, the need management has for information, the interest non-management people have in the enterprise through its accounts (lenders, investors, workers, customers, government).

Examples of decisions that a knowledge of this

enterprise's accounts can help to make—decisions of many different people on many different matters.

Significance of the relationship of various important statement items and of quantitative changes in these relations—this without getting the student deeply involved in the technique of financial statement analysis.

The major instructional problem in using such an outline would be that of restraint. So much could be said about each topic for each enterprise that the objectives of the course could be met only by the most careful selection of points to be made. It would help to accomplish this selective restraint if the thought were kept continuously in mind that the student's grasp of the meaning of accounting will be cumulative. It would serve no useful purpose to try to deal comprehensively with any single enterprise, or with any single phase of accounting.

Accounting Limitations. There is no need to outline here the limitations that are inherent in financial statements in particular and in accounting in general. But these students should not leave the course without a good understanding of this fact. They should not be oversold on the universality of accounting or on its indispensability. Yet, in dilating on limitations, the teacher must hold to a clear perspective lest his students emerge with the feeling that accounting is so shot through with shortcomings that its usefulness is largely puff.

The layman's initial lack of knowledge about economics, business, and accounting is likely to invest these matters with more mystery than they deserve and more powers than they possess. Therefore it is as necessary to make clear what is not in financial statements as to describe what is in them. A substantial portion of the second part of the course (second semester, if it is a year course) should be designed to scotch any notion that the capital statement (except in special cases of bankruptcy, etc.) should express market values, or liquidation values, or replacement values. Here is the place to explain accrual accounting, especially in relation to the wish for a sharply defined calculation of periodic net income. This is the place also to do whatever can be done to correct the typical lay idea that cash is the keynote of business and of accounting.

It would be a distinct service to many people who are laymen so far as accounting is concerned, if in their study of accounting they were taught to distinguish clearly (1) between value (worth, utility) and invested-cost-price (capital adventured), and (2) between the accounting significance of reporting cash in, cash out, on the one hand, and of reporting revenue earned, expense incurred, including in the latter profit and loss reserves when appropriate.

They should also be brought to realize that accounts cannot be expected to furnish any interested party with all the information he might need. Management and investor decisions must rest partly upon non-accounting data, such as statistics of general economic conditions, facts about competitive status, legal restrictions, internal policies, etc.

It will help such students if the major conventions, traditions, and assumptions that underlie accounting are discussed, for these often reveal limitations that would not occur to the layman. Some reference to the limits of professional responsibility (legal and moral) would also be appropriate. For the auditor cannot in fairness be expected to discover fraud without fail any more than a physician can be penalized if he fails to cure a patient. And it must be made clear that a reasonable relationship exists between the scope of the auditor's investigations and the objectives of his engagement.

One other type of limitation deserves mention, namely, that involved wherever variations exist in the accounting treatment that is acceptable. It is common-

place in accounting and well understood by accountants that "circumstances sometimes alter cases." A physician does not necessarily prescribe the same way for the same trouble in different people; the public expects him to weigh individual differences. The same should be expected of professional accountants; but sometimes when he follows this professional duty to exercise independent judgment, people may charge that he is merely a tool of certain clients. The layman therefore needs orientation in these areas of professional discretion. He will then come to understand that the professional accountant has to chart a difficult course through shoal waters.

Pliant acceptance of whatever accounting treatment shortsighted self-interest within an enterprise may propose might sometimes seem the easiest way. Yet such a reaction would not only constitute a denial of the auditor's independence, but it would give tacit support to an obviously impossible managerial doctrine that "net income is what management says it is." Again, rigid insistence upon a single standardized treatment of a similar situation for everyone would, in effect, support a contrary, and equally impossible, doctrine, that "net income is what the public accountant says it is." There is shallow water on both sides. And the layman will easily realize that it takes a professional to steer between the danger spots—that is, it takes a person whose independence, education, and training fit him to judge the suitability of the treatment according to the relative weight of the circumstance that should be controlling and the reasons which point to one alternative over another.

To some readers such an outline may seem suitable only for a graduate course. It surely would not be very well adapted to lower-division students in college; it would not be very useful to accounting majors. If the "laymen" concerned are students aiming at economics, statistics, law, etc., they might very well be, for the most part, graduate students, or near-graduate students in their chosen field. But this sort of study of accounting need not be limited to these groups; it would be well adapted to any students of good scholarship and reasonable maturity, and could still carry postgraduate credit as a minor subject in conjunction with a variety of major subjects.

The layman will not understand accounting well until he knows more about the accountant, especially the professional accountant. And especially something of his problems of a nicely discriminating judgment, such as the following:

> "The answers to the questions, 'Is an item normal?', and if so, 'Is its amount normal?', would depend on its relation to the other items and on the relation of its amount to the other amounts. The norm of these relationships may differ widely from industry to industry, and sometimes from company to company within an industry. The accountant would have to rely on his judgment, in the light of all the circumstances of which he is aware, in each case." (E. A. Kracke in the *Journal of Accountancy*, July, 1946.)

Towards a Professional Course. Most college courses are compromises because it is frequently necessary to use them for more than one purpose. Courses in auditing are no exception. Yet, because the subject matter is professional, it might be of interest to speculate on the characteristics of an auditing course (and its immediate antecedent courses) if it were made as professional as possible.

The course might be designed in a manner to give students some training for their initial employment in auditing. Would it then aim at presenting internal auditing first and external auditing later? In separate semesters? Or is training for one also training for the other? Will the work of the course, under this objective, give a good deal of emphasis to the preparation of

typical working papers? Are working papers standardized enough to be dependable guides to practice when generalized for student use? Are accounting theory and audit policy sufficiently uniform in enough particulars that the student will not have to unlearn a good deal when he joins the staff of a given firm?

Perhaps learning is more than preparing to remember. If that is the case, and if the student knows that it is, then classroom working papers need not be standard to be educationally useful; and neither theory nor policy needs to be uniform in the field to be helpful to the student. Probably it should be one of the teacher's duties to convince his students that working papers are not standardized and theory is not uniform. For this would help the student to realize that concrete materials (working papers and data) and specific ideas of good accounting (theory and policy) were but vehicles for learning to think as an auditor thinks.

It would be a mistake to exclude concrete materials from the course. But it would be a greater mistake to focus instruction upon remembering forms and procedures.

The course might be given an objective aiming beyond the details of verifications and schedules. It might point the student, for much of his study time, toward a staff man's supervision responsibilities. Then it would be necessary to use materials and teaching methods suitable for training a person for certain particular things: to judge what evidence was satisfactory for showing reliability of documents, of ledger accounts, of accounting systems; to recognize for what they are, good, bad, and intermediate degrees of accounting treatment; to organize the field staff on a given engagement and keep the work moving; to detect the questions that need to be taken up with client or principal; to write audit reports.

Can such training be given in the classroom? In the same semester as working papers? With existing instructional materials? Or must every individual learn the techniques of supervision, if he can, by observation in the field alone? If anything is "learnable," is it not likewise "teachable"? If it is teachable, is there not economy and benefit from teaching under classroom methods?

Perhaps the plan of the course might be to teach fundamental principles in school, leaving a knowledge of applications to be gained in the field under the influence of the policies and methods of a particular firm.

Is the operation of every firm so different from that of every other one that classroom instruction in trying to be concrete will defeat its own purpose? Are the diversities of application so many and so far apart that applications cannot be usefully associated with fundamental principles in the classroom? Can methods and procedures be reduced to principles and taught as such? Can nothing be learned in the classroom of the art of fitting methods suitably to varying circumstances? Are there enough fundamental principles of auditing to constitute a course? Without including applications?

If the term "fundamental principles" is loosely defined, it may include any amount of material descriptive of methods, procedures, forms, and habits. Descriptions have a very useful place in education; but descriptions cannot help very much in developing analytical capacity or discriminating judgment. If the term is closely defined, even including auditing standards along with auditing principles, they may be so few in number that the student's task is soon finished (when applications are dealt with elsewhere).

How long would it take in class to study auditing standards? How much time for professional independence? For standards

of technical competence, of objectivity in field examinations, of acceptability of internal control, of due care in selecting procedures and materiality of the issues raised of full disclosure? If divorced from descriptive applications, or if given before application (procedures and methods) had been studied, the material would neither take very long nor do the student much good. Yet, skillfully integrated with other materials, standards are indispensable to the student, for they are some of the theory essence of auditing.

Much the same could be said of the fundamental principles of auditing. They can be compactly stated; they could be understandingly studied in a relatively short time; they are indispensable to the student.

All that is auditing could be brought under the application of the "principle of critical review." Expanded a little, this phrase could become a descriptive statement, such as, "auditing provides techniques for reviewing accounting methods and data." More completely phrased this statement would be as follows:

> "Auditing helps to give assurance that reported accounting data will be dependable, by providing organized reviewing techniques for the use of technically trained individuals, who will critically examine the suitability and effectiveness of the details of accounting structures and who will critically judge the appropriateness of the actions taken in carrying on accounting processes."

Three more "fundamental principles": (a) "The statistical credibility of the data presented in the accounts and statements is in question until they have been tested by auditing." (b) "The external auditor seeks to substantiate the representations management makes in the accounts and statements by finding various kinds of corroborative evidence." (c) "Financial statements serve the needs for enterprise information of such a wide variety of people that a duty rests upon those responsible for statement preparation to see that a full, clear disclosure of material facts is made."

Would it take very long to analyze, illustrate, and discuss these and other principles of auditing? A semester? Without dealing with "application," except as illustrations?

Finally, what type of accounting course should precede and follow auditing (when the sole object is to present a sequence of professional courses)?

Would the preceding courses give special emphasis to systems and theory? Systems, because knowledge of the anatomy of business enterprises is indispensable to the conduct of an audit? Theory, because a knowledge of good and evil, accountingwise, is indispensable to the exercise of an auditor's critical judgment? Or could systems and theory be studied as needed in close association with procedure? In one semester? If two semesters, where to divide the courses?

Would the professional courses that follow the basic study of auditing be at the postgraduate level? Consisting of more verification procedure, systems, theory? Mixed together as in the antecedent courses? Audit peculiarities of various lines of business? Plus adaptive audit program building? Would the advanced work include corporation finance and investment analysis? Practice in writing audit reports and research reports?

Are the materials available for a series of courses in professional auditing that would be comparable in quantity and objectives to law school courses in, say, court procedures? If not now available, can the necessary material be found in needed diversity and of good quality? Are the procedures of established firms too individualistic and too confidential for publication as instructional material? Perhaps the question should not be stated in that way, since every textbook in auditing is an answer in

the negative. But is there enough pooling of professional knowledge of techniques, of ways and means, so that an extensive, detailed, comprehensive professional literature may rise as fast as possible?

Every strengthening of professional competence is in the public interest; and whatever is in the public interest—accountingwise—is in the interest of the profession. How shall we go about it?

The Horizontal Ledger—As more details are learned about the 1880's and the 1890's, it becomes ever clearer that a great many occurrences in the last double decade of the nineteenth century played an important part in making it possible for accounting in the twentieth century to be what it is. An article in this issue by H. J. Stoeckel is a case in point. The older men in the profession personally saw loose-leaf records develop, and watched bound account books go out of fashion. They were keenly aware too of the growing conflict of the day between ready-made accounting systems and systems that were hand-tailored, so to speak, by experienced public accountants. But younger men can know what happened then only by hearsay or from history.

It may be interesting to note, along with the early history of loose-leaf methods, certain companion developments that are part of the same time-picture.

On the continent of Europe, bookkeeping was held rather strictly to the Italian model described by Paciolo in 1494, that is, day-book, journal, ledger. When loose-leaf records and multi-column journals appeared these were often called "American bookkeeping."

Although loose-leaf was distinctly American, the basic idea of using special columns to produce totals to reduce the work of posting details may not be of American origin. But even if the early uses of special columns and total posting may be of uncertain time and place, it is very probable that American use developed the idea greatly.

It is known, however, that the so-called "Boston Columnar Ledger" originally appeared in Boston in the 1880's. It was devised in the office of John Horne and M. S. Kuhns, partners in public accounting in the days before 1885, when bonding companies sometimes asked that audits be made and when banks were beginning to ask for copies of the audited statements.

A friend of John Horne planted the germ of the idea in 1880. This Canadian accountant said he often wondered why someone did not combine a ledger and a trial balance book in one volume. It would save the time and work of transferring the names and balances from the ledger each month to the trial balance book.

In the ledger that resulted the data for each account were entered horizontally instead of vertically as had been the custom since double-entry bookkeeping began in Italy before the time of Columbus. The last balance on each account-line—since all balances stood in the same vertical column—became an item in the trial balance. But on each page was space for only six months' use, and bookkeepers thought the time saved for them was not very impressive. The other partner, M. S. Kuhns, made the time saved to bookkeepers much greater by cutting off an end margin on each second leaf so that the short leaf would reveal the original list of accounts on the prior left margin. By using three intermediate short leaves instead of one, it was easy to make provisions for an account to run two years without rewriting the name. This ledger was, of course, a bound book.

In 1885, Horne and Kuhns introduced another feature for accounting systems—a "private ledger" equipped with lock and key. Here were kept the capital and expense accounts of a company, salaries of officers, controlling accounts of sales and

purchase ledgers, and any other cumulative accounting information the firm desired to keep confidential. A partner, or trusted employee, posted the essential figures from the usual accounting records and only this person need see the trial balance or know the condition of the important accounts.

Although slow to adopt new forms of account books, the banks in Boston arranged to have their ledgers made according to the new plan, with cut margins and columns headed with the days of the week (since they desired balances daily). These books came to be known as "Boston Bank Ledgers."

The "Safeguard System of Accounts" as Horne and Kuhns called their methods, was installed in hundreds of establishments, and concerns from Maine to California sent for the accountants of the Safeguard Account Company. This corporation was listed (with other public accountants) in the New York City directories of 1892, 1897–99, and in the Chicago directories, 1890–1899. Maurice S. Kuhns received New York CPA certificate No. 97 in 1897, and was a member of the committee which obtained the Illinois CPA law of 1903. In 1912 the firm style was changed to M. S. Kuhns and Co., Certified Public Accountants.

Early Accounting Machines. The foundations for machine accounting were laid in the double decade of the 1880's and 1890's. Most of the necessary inventions had been made before 1900. In the years that followed the devices were perfected, production techniques were developed, cost reduced, and the usefulness of office machines was sold to the business public. Selling the idea was probably the hardest task of the four.

About fifty years later there now is talk of adapting electronics to applications in office and accounting machines. Professor Matz, elsewhere in this issue, discusses some of these possibilities. But immediate results are unlikely; the same old problems will need to be met again: perfecting the devices, reducing first cost, selling the usefulness.

When Blaise Pascal built a mechanism that could be made to add and subtract, when Gottfried Wilhelm Leibnitz announced a machine for multiplying and dividing as well as adding and subtracting, and when Henry Mill was granted a patent for a machine "for the impressing or transcribing of letters singly or progressively," all of them no doubt had high hopes for the future of their devices. But even the inventors' dreams could hardly anticipate the developments of their ideas that had taken place by the late nineteenth century —to say nothing of the twentieth century adaptations. For the time was 1642 for the Frenchman Pascal, 1671 for the German Leibnitz, and 1714 for the Englishman Mill.

After machines that could add and machines that could write had been developed separately, it was natural that the two faculties should be combined in one device. Together they make an accounting machine.

In America a key-driven device for adding was patented in 1850, and one for typing in 1872. The Remington typewriter was first marketed in 1874. The Burroughs adding machine was first exhibited in 1884 (figures printed on a tape were included in 1888). In 1891 two men—Cawford Elliott and Robert J. Fisher—patented different machines to write on flat surfaces, thus making it possible to type records in bound books at about the same time that loose-leaf account books were laying another foundation under machine accounting.

After 1900, adding and writing were put together. In 1908 the Wahl adding register was attached to the Remington typewriter, making the machine useful for

bookkeeping purposes (using loose-leaf sheets) as well as for separate writing or adding. The Moon-Hopkins billing and bookkeeping machine was first marketed in 1909. Elliott-Fisher accounting machines date from 1913.

Collateral to these are numerous office machines which, while useful for their purposes, are not so directly "bookkeeping machinery" as those named above. These include the cash register (1884), addressograph (1893), and various calculators such as Comptometer (1886), Marchant (1908), Monroe (1912).

Punch-card sorting and tabulating machines are in a class apart. Bookkeeping requires writing and adding for its records. Originally these functions were done by hand (this need not imply that adding was done on the fingers); later the processes were greatly speeded up by the use of machinery having finger-depressed keys (so adding was done by the fingers after all). But bookkeeping is also statistical in nature; its major contribution comes from sorting and classifying the facts that come under the jurisdiction of its rules. Sooner or later this aspect would be recognized and mechanized.

The present-day applications of the Hollerith electric tabulating machines to mass accounting classifications are familiar. Herman Hollerith spent a decade in experimenting to produce a "census machine." His patent was granted in 1889; but it was not until long afterward that there was a sufficient mass of accounting data within a given enterprise to justify this type of mechanization. Most accounting data serve their purpose in a single use. When this is the case much of the advantage of punch-card records would go unused.

Mechanization would prove more useful if business firms engaged in more research using accounting data. Or put the other way, if businessmen were research-minded about the data accumulating in their accounts, further mechanization of their accounting processes would be indicated, perhaps even the employment of ultra-high-speed electronic posting and tabulating.

The results probably would soon reach the point of canceling the attendant cost. For really high-speed methods could make the cumulative account balances of today available at once for the financial statements of tomorrow; and between statement dates could pour out analytical data enough to keep an "accounting research department" busy searching for clues to relationships between policies and results, between enterprise conditions and economic conditions.

If electronic devices are to be effectively employed in accounting it may be necessary to make further changes in the classification side of accounting. It used to be the custom to note in the ledger account the name of the contra account involved in each entry. The aid this could be in later analyzing a given account is now obvious. But the practice fell into disuse probably at the time that complex, combined journal entries came into use making this notation more difficult. Yet such cross-classification is basically characteristic of double-entry accounting. Perhaps the full exploitation of the analytical possibilities lying in this fact is only waiting the development of ultra-high-speed tabulation of data and the resulting summarization of details into a multitude of subclasses.

Further changes are no doubt also on the way in the original-record side of accounting. The daybook persisted for a long time. But finally, as Mr. Stoeckel indicates, documents were themselves made into posting mediums through loose-leaf binding, and daybooks lost their accounting usefulness as the antecedent source of all journal entries. One effect of loose-leaf was the increased compactness in records that was achieved. Now we can see Recordak micro-

film methods going further and compressing 3,000 business documents into a single 100-foot roll of 16 mm. film and at the same time providing the means of quickly finding any item wanted for re-examination in a viewing machine.

In eighteen years this latest development has made it possible to reduce bulky files to about one-fiftieth of their original size and to copy any document, tabulation, or account with photographic accuracy and speed. It has been called "one of the most spectacular achievements in the history of business systems and record keeping." It is all that and still has ubtapped applications. Electronic tabulating of accounting data would be another spectacular achievement and its future too is unknown. In their day, loose-leaf records and the simpler accounting machines were spectacular changes. When they were eighteen years old, we can see now, they were still struggling through their beginning. The compacting of records has indeed made progress: bulky invoice books, loose-leaf carbon copies, tabulating machine cards, microfilm rolls.

But in some ways the most specatcular development came long ago—double-entry bookkeeping itself. It has not been necessary to change its basic ideas in 500 years. It is as suitable for integrating business transactions today as it was long before the time of Columbus. The early Italian record keepers could have had no notion whatever of how spectacularly successful and infinitely adaptable their methods would prove to be.

Sixteenth Century Systems. The Paciolean tradition of day-book, journal and ledger was so impressed upon Europeans that in some countries statutory law came to require that all ledger entries be derived from posting a journal—a practice which spread to Latin-American countries. Even where the force of law did not support the three-book system, it was universally the basis of textbook explanations, and usually still is. But these conditions should not obscure the fact that more "system" than this was needed (and was developed) very early. And descriptions of the nineteenth century loose-leaf or columnar records should not be assumed to deal with the next system development to follow the Venetian method of daybook, journal, and ledger. No doubt Paciolo was fully aware of other existing methods, for he took care to mention that he was describing the methods used in Venice.

Only a few writers have pointed out that old business records preserved from the fifteenth and sixteenth century clearly show that men engaged in textile manufacture used other records, some being posting mediums and others auxiliary records. Some examples are as follows: a book of loans (cf. accounts payable ledger and notes payable book); a book of invoices (cf. sales book); a book of materials bought and used (cf. stores ledger); a book of materials delivered to workmen (under the household system of manufacturing); a book of wages due and paid; a book for finished textiles returned by workmen, for listing wage and material costs.

Some of these records, such as those for wages, included separate books for wool washers, spinners, weavers, etc. Sometimes a workmen's ledger was used to show charges and credits to individuals. Often these provided source material for forming into regular journal entries. Occasionally their use was so well interlocked with ledger accounts that the basic records could be posting mediums.

One particularly interesting example was called a book of income and outgo—in reality a subdivided cash book for posting to ledger accounts. This book had four sections: (1) cash receipts from all sources, (2) purchases and partners' withdrawals, (3) workers' services received (measured by wages due, hence expressing wage cost,

not disbursement for wages), (4) money paid out.

These reflected some basic cost accounting ideas very early. Here was recognition of the separateness of costs by processes, of the need for uniting material and labor costs, of the distinction between labor cost and wage disbursements.

Perhaps these various records were not often all used by a given manufacturer; perhaps those used by one person often were not closely enough knit together to constitute an "accounting system," either separate from or in conjunction with daybook, journal, and ledger. But the structural elements of "a system" were clearly present, and the desire existed in the minds of enterprisers for basic "cost information." Sooner or later such desires and such structural elements were bound to be so firmly united as to produce a real cost system. The history of cost accounting has not yet been written. But when it is, its roots will be found reaching a long way back in time. And the wonder will be that, with such a start, it could take so long to evolve into the still uncoordinated cost accounting procedures that were typical of the nineteenth century. It is easier to recognize the factors which in the twentieth century produced an extraordinary acceleration in the development of accounting systems in general and cost accounting in particular, than it is to understand why a good start was so slow in gathering momentum.

Loose-leaf and columnar records before 1900 played a part in the later acceleration; and the growth of industry and mass production had a role, as did also the quiet blooming of professional accounting. But the tap-root of "systems" reaches back 500 years.

PROFESSIONAL EXAMINATIONS
A Department for Students of Accounting

HENRY T. CHAMBERLAIN

THE FOLLOWING problems were prepared by the Board of Examiners of the American Institute of Accountants and were presented as the second half of the C.P.A. examination in accounting practice in May, 1946. The candidates were required to solve both problems. The weights assigned were: problem 1, 35 points; problem 2, 15 points.

The time allowed was four and a half hours. A suggested time schedule is given below:

Problem 1.....120 minutes
Problem 2..... 60 minutes

No. 1

From the information submitted hereafter, prepare a corrected balance-sheet of The Acme Trading Company as at December 31, 1944.

THE ACME TRADING COMPANY
Balance-Sheet, December 31, 1944, per Books

Assets

Current Assets:			
Cash in banks			$151,200
Accounts and notes receivable		$105,000	
Less—Reserve for bad debts		2,400	102,600
Inventories			182,000
Total current assets			$435,800
Property:			
Land		$ 35,000	
Buildings	$ 70,000		
Less—Reserve for depreciation	16,300	53,700	
Machinery and equipment	$130,000		
Less—Reserve for depreciation	39,000	91,000	
Total property			$179,700
Investment in subsidiary company—The Smith Company			30,000
Redemption fund for serial bonds			14,000
Unamortized discount on serial bonds payable			4,950
			$664,450

Liabilities

Current Liabilities:	
Notes payable—trade	$ 10,000
Notes payable—banks	10,500
Accounts payable—trade	130,600
Accrued liabilities	5,800
Estimated federal income taxes payable	12,000
Serial bonds payable, 4½%, series A, due January 2, 1945	10,000
Interest on notes receivable—collected in advance	350
Total current liabilities	$179,250
Fixed Liabilities:	
Serial bonds payable, 4½%, series B to J, due at one year intervals, beginning January 2, 1946, and ending January 2, 1954	$ 90,000
Deferred credits to income:	
Customers' advance payments for merchandise deliveries to be made in 1945	12,000

Capital:			
Capital stock—common: authorized 1,000 shares, issued, outstanding and in treasury 500 shares		$ 50,000	
preferred: authorized $100,000, issued and outstanding 600 shares		60,000	
Total		$110,000	
Capital surplus		106,500	
Earned surplus:			
Balance, January 1, 1944	$150,200		
Add—net income for year ended December 31, 1944	25,500		
	$175,700		
Deduct—purchase cost of treasury stock	9,000	166,700	383,200
			$664,450

Additional data, determined in examination of the accounts:

1. Cash in banks includes $15,000 in a special bank account, segregated to meet estimated cost of a building extension for which the contract was let early in 1945.
2. Accounts and notes receivable includes an amount owing from an officer, $4,000, payable on demand, and has been reduced by $1,250 owed by the company to various employees.
   The reserve for bad debts is computed at 1½% of total gross sales.
3. The inventories include advance payments of $6,000 made by the company to its suppliers for merchandise to be manufactured and delivered March 1, 1945.
   Merchandise purchased for $5,000 in December, 1944, and remaining unsold as at December 31, 1944, was financed through notes payable to banks, collateralized by trust receipts.
   The basis of inventory valuation is cost or market whichever is lower.
4. The property accounts, with the exception of land, are stated at cost less accumulated depreciation. In accordance with a note of the directors the book amount of land was increased $10,000 over cost on the basis of an appraisal by the X Engineering Company as of July 1, 1944. This increase was booked as a debit to land account and a credit to capital surplus. Machinery and equipment includes a machine costing $8,000 and having a net book value of $4,500, which has been segregated and made available for sale. Price offers received from prospective purchasers indicate a probable sales value of $3,000.
5. The investment in The Smith Company represents the purchase price of 80% of the outstanding stock of The Smith Company. The acquisition was made on January 2, 1944, at a cost of $30,000 or $2,000 more than the underlying book value of the subsidiary's net assets as of that date. During the year The Acme Trading Company credited to income account $4,000 dividends paid by The Smith Company from its earned surplus. The net earnings of The Smith Company for the year 1944, were $2,000.
6. The redemption fund for serial bonds represented cash which had been turned over to the trustee for redemption of these bonds as they mature.
7. The book amount of unamortized discount on serial bonds payable represents 90% of a total discount of $5,500 involved in the issue, as of January 2, 1944, of $100,000 serial bonds, maturing at one-year intervals, in equal amounts of $10,000, beginning January 2, 1945.
8. The preferred stock (par value $100 per share) is 5% cumulative and has a liquidation preference of $110 per share; undeclared dividends accumulated to December 31, 1944, equal $5 per share. Common stock (without par value) was issued for cash at $200 per share of which the directors voted to carry one-half to capital surplus.
9. The capital surplus account has been charged $3,500, representing the amount of a fire loss on buildings, to the extent not compensated for by insurance, sustained October 15, 1944.
10. The earned surplus account has been charged for the purchase of treasury common stock at $9,000, or $1,000 less than the original issue price. Such stock is canceled by the Board of Directors, with the approval of stockholders, in January, 1945.
11. The balance-sheet fails to reflect these two facts:
    (a) An accommodation indorsement by The Acme Trading Co. on a 6%, $10,000 demand note of The Smith Company, outstanding as at December 31, 1944.
    (b) An acceptance by The Acme Trading Co. of a $1,000, 30-day time draft, dated December 15, 1944, drawn on the company by a trade creditor in favor of the latter.

NOTE: Ignore the effect of any 1944 income adjustments on the tax liability for that year.

From the following information determine taxable net income of Mart Co., Inc., for purposes of the 1945 United States corporation income-tax return.

Mart Co., Inc., is a dealer in personal property and, for purposes of the United States income tax, reports gross profit on sales on the installment basis. Accordingly, gross profit realized and reportable each year is X dollars (cash collections on installment sales of current and prior years times the gross profit percentage during the respective year of sale). Worthless accounts are deducted in the year of default; a provision to a reserve for bad debts may not be deducted. With respect to repossessions, a deduction may be taken to the extent of the excess of the unrecovered cost over the salvage value of the repossessed merchandise.

1. Income etc. items for 1945:

Particulars	*Amount*
Sales—installment	$1,000,000
Sales—regular and cash	90,000
Cost of goods sold—installment	650,000
Cost of goods sold—regular and cash	60,000
Interest on municipal bonds	4,500
Recovery of bad debt (uncollected regular account receivable) charged off in loss year (1938)	175
Gain from sale of 500 shs. of Young Co., common stock	1,050
Compensation of officers	35,000
Loss from sale of old machinery	450
Net capital loss carry-over from 1944	225
Federal income-tax deficiency for 1941, including interest $480*	2,980
Provision for federal income tax—1945	35,000
Salaries and wages paid	13,500
1944 personal property tax paid, including interest, $20*	520
Depreciation	9,500
State tax for 1945	8,000
Personal property tax for 1945	590
Real property tax for 1945	1,250
Fire loss unrecovered by insurance	1,800
Net operating loss deduction	12,500
Dividends paid to stockholders	15,000
Other allowable deductions	125,000
Provision for bad debts (installment, $3,000; regular, $600)	3,600
Unrealized gross profit on installment sales as at December 31, 1944	322,800
Bad debts written off, regular accounts	400

* Interest paid on liability for taxes assessed during 1945.

2. Accounts receivable—installments analysis for 1945:

Particulars	*Year of sale—installment*				
	Total	*1945*	*1944*	*1943*	*1942*
Debits—					
Balance, at January 1, 1945	$ 970,000	—	$640,000	$310,000	$20,000
Sales	1,000,000	1,000,000			
	$1,970,000	$1,000,000	$640,000	$310,000	$20,000
Credits—					
Cash collections	$ 897,000	$ 295,000	$305,000	$280,000	$17,000
Repossessions†	66,500	45,000	15,000	5,000	1,500
Bad debts‡	6,250	—	3,250	2,500	500
	$ 969,750	$ 340,000	$323,250	$287,500	$19,000
Balance, at December 31, 1945	$1,000,250	$ 660,000	$316,750	$ 22,500	$ 1,000

† Fair market value of merchandise repossessed (established on the basis of cost less depreciation and refurbishing expenses), $35,000. The total net loss involved (after deduction of fair market value and unrealized gross profit) is $8,600.

‡ After deducting unrealized gross profit the total figure is $4,195.

3. Unrealized gross profit on installment sales as at December 31, 1944, per the 1944 income-tax return:

Year of Sale	*Accounts Receivable Installments*	*Unrealized gross profit* *Percent*	*Amount*
1942	$ 20,000	30%	$ 6,000
1943	310,000	32	99,200
1944	640,000	34	217,600
	$970,000		$322,800

Solution to Problem 1

The Acme Trading Company
Work Sheet
December 31, 1944

Statement Order		*Balance Sheet Before Adjustment*	*Adjustments and Reclassification* *Dr.*	*Cr.*	*Balance Sheet After Adjustment*
	Current assets				
1	Cash in banks	$151,200.00		(a) $15,000.00	$136,200.00
2	Accounts receivable	105,000.00		(b) 2,750.00	102,250.00
3	Inventories	182,000.00		(d) 5,000.00 (c) 6,000.00	171,000.00
5	Due from officer—demand note		(b) $ 4,000.00		4,000.00
4	Advances to suppliers		(c) 6,000.00		6,000.00
3	Inventories pledged on note to bank		(d) 5,000.00		5,000.00
7	Cash in special account to finance building ext.		(a) 15,000.00		15,000.00
	Property				
8	Land, at appraised value	35,000.00			35,000.00
9	Buildings	70,000.00			70,000.00
10	Machinery and equipment	130,000.00		(f) 8,000.00	122,000.00
12	Investment in subsidiary company	30,000.00		(g) 2,400.00	27,600.00
11	Redemption fund for serial bonds	14,000.00			14,000.00
Contra	Unamortized discount on serial bonds	4,950.00		(i) 450.00	4,500.00
Contra	Treasury stock	9,000.00		(k) 9,000.00	
6	Machinery and equipment held for sale (Sales Value)		(f) 3,000.0		3,000.00
		$731,150.00			$715,550.00
	Current Liabilities				
1	Notes payable—trade	$ 10,000.00		(l) $ 1,000.00	$ 11,000.00
2	Notes payable—banks	10,500.00			10,500.00
3	Accounts payable—trade	130,600.00	(l) $ 1,000.00		129,600.00
4	Accrued liabilities	5,800.00			5,800.00
6	Estimated federal income taxes	12,000.00			12,000.00
	Serial bonds payable	10,000.00	(h) 10,000.00		
	Interest on notes receivable—coll. in adv.	350.00	(m) 350.00		
5	Due to employees			(b) 1,250.00	1,250.00
7	Customers advance payments			(n) 12,000.00	12,000.00
	Fixed liabilities				
8	Serial bonds	90,000.00		(h) 10,000.00	100,000.00
	Deferred credits to income				
	Customers' advance payments	12,000.00	(n) 12,000.00		
Contra	Interest on notes collected in advance			(m) 350.00	350.00

Statement Order		*Balance Sheet Before Adjustment*	*Adjustments and Reclassification* Dr.		Cr.		*Balance Sheet After Adjustment*
	Reserves						
Contra	Reserve for doubtful accounts	2,400.00					2,400.00
Contra	Reserve for depreciation—buildings	16,300.00					16,300.00
Contra	Reserve for depreciation—machy. & equip.	39,000.00	(f)	3,500.00			35,500.00
	Capital						
10	Common stock, less treasury stock	50,000.00	(k)	5,000.00			45,000.00
9	Preferred stock, liquidating pref. $110.00	60,000.00					60,000.00
11	Capital surplus	106,500.00	(k)	4,000.00	(j)	3,500.00	96,000.00
			(e)	10,000.00			
12	Earned surplus—January 1, 1944	150,200.00					150,200.00
13	Unrealized appreciation of land				(e)	10,000.00	10,000.00
12	Net income for year	25,500.00	(f)	1,500.00			17,650.00
			(g)	2,400.00			
			(i)	450.00			
			(j)	3,500.00			
		$731,150.00					$715,550.00

Notes to balance sheet.
(1) Cumulative dividends on preferred stock.
(2) Accommodation indorsement for the Smith Company.

Key to Adjustments

(a) To reclassify cash for construction.
(b) To remove officer's account from trade accounts and to set up liability to employees.
(c) To show as separate item advances to suppliers.
(d) To segregate inventory pledged.
(e) To remove appraisal surplus from capital surplus.
(f) To remove machinery held for sale and to adjust accounts for anticipated loss on sale.
(g) To apply distribution of surplus at date of acquisition against cost of investment.
(h) To remove current maturity of bonds from current liabilities.
(i) To adjust discount on serial bonds. In this solution discount is amortized on the basis of the bonds outstanding method. 2/11 of $5,500.00 is the proper charge.
(j) To charge net income for fire loss.
(k) To adjust capital stock and capital surplus accounts for cost of treasury stock.
(l) To reclassify acceptances payable.
(m) To remove interest received in advance from current liabilities.
(n) To reclassify customers' advance payments.

The Acme Trading Company
Balance Sheet—December 31, 1944

Assets			
Current Assets			
Cash in banks		$136,200.00	
Accounts and notes receivable	$102,250.00		
Less: Reserve for bad debts	$ 2,400.00		
Int. on notes collected in advance	350.00		
	$ 2,750.00	99,500.00	
Inventories, at cost or market whichever is lower, including $5,000.00 pledged as security on bank loan		176,000.00	
Advances to suppliers		6,000.00	
Due from officer on demand note		4,000.00	
Total current assets			$421,700.00
Machinery and equipment held for sale, at estimated sales value			3,000.00
Cash in special account to finance building extension			15,000.00
Fixed Assets			
Land, at appraised value, per report of X Engineering Co. dated July 1, 1944		$ 35,000.00	
Buildings	$ 70,000.00		
Less reserve for depreciation	16,300.00	53,700.00	
Machinery and equipment	$122,000.00		
Less reserve for depreciation	35,500.00	86,500.00	175,200.00
Redemption fund for serial bonds			14,000.00
Investment in The Smith Company —80%—at cost			27,600.00
			$656,500.00

Liabilities			
Current Liabilities			
Notes payable—trade		$ 11,000.00	
Notes payable—banks, on which inventory of $5,000.00 has been pledged		10,500.00	
Accounts payable—trade		129,600.00	
Accrued liabilities		5,800.00	
Due to employees		1,250.00	
Estimated Federal income taxes		12,000.00	
Customers' advance payments		12,000.00	
Total current liabilities			$182,150.00
Serial bonds payable, 4½%, series A to J, due at one year intervals, beginning January 2, 1945		$100,000.00	
Less unamortized bond discount		4,500.00	95,500.00
Capital stock and surplus			
Preferred stock, par value $100.00 per share, 5% cumulative, liquidating value $110.00 per share. Authorized 100 shares, issued and outstanding 600 shares		$ 60,000.00	
Common stock, no par value, authorized 1,000 shares of which 500 shares were issued and 50 shares are held in the treasury		45,000.00	
Capital surplus		96,000.00	
Earned surplus:			
Balance, January 1, 1944	$150,200.00		
Net income for the year	17,650.00	167,850.00	
Unrealized appreciation of land		10,000.00	378,850.00
			$656,500.00

NOTES: 1. At the date of the balance sheet dividends on the 5% cumulative preferred stock were undeclared in the amount of $3,000.00.
2. The Company is contingently liable as an accommodation endorser to a note of The Smith Company in the amount of $10,000.00.

Solution to Problem 2

Mart Co., Inc.

Computation of Taxable Income
1945

		Deductions	*Income*
Gross profit realized on installment sales			$301,650.00
Sales not on installment basis			90,000.00
Cost of sales not on installment basis		$ 60,000.00	
Capital gain	$1,050.00		
Capital loss carry-over from 1944	225.00		825.00
Officers' salaries		35,000.00	
Loss from sale of assets used in business		450.00	
Interest paid on 1945 assessments		500.00	
Salaries and wages paid		13,500.00	
Depreciation		9,500.00	
State tax		8,000.00	
Personal property tax		590.00	
Real property tax		1,250.00	
Fire loss		1,800.00	
Net operating loss deduction		12,500.00	
Other allowable deductions		125,000.00	
Bad debts—regular accounts		400.00	
Bad debts—installment accounts		4,195.00	
Loss on repossessions		8,600.00	
		$281,285.00	$392,475.00
Taxable net income		111,190.00	
		$392,475.00	$392,475.00

Gross Profit Realized

	1945	*1944*	*1943*	*1942*	*Total*
Cash collections	$295,000.00	$305,000.00	$280,000.00	$17,000.00	$897,000.00
Gross profit percentage	35%	34%	32%	30%	
Gross profit realized	$103,250.00	$103,700.00	$ 89,600.00	$ 5,100.00	$301,650.00

Bad Debts—Installment Accounts

Accounts charged off		$ 3,250.00	$ 2,500.00	$ 500.00	$ 6,250.00
Gross profit percentage		34%	32%	30%	
Gross profit		$ 1,105.00	$ 800.00	$ 150.00	$ 2,055.00
Bad debts—installment accounts					$ 4,195.00

Repossessions

Accounts	$ 45,000.00	$ 15,000.00	$ 500.00	$ 1,500.00	$ 66,500.00
Cost percentage	65%	66%	68%	70%	
Unrecovered cost	$ 29,250.00	$ 9,900.00	$ 3,400.00	$ 1,050.00	$ 43,600.00
Fair market value of repossessed goods					35,000.00
Loss on repossessions					$ 8,600.00

Notes

1. If the stock in Young Co. had been held more than six months the corporation could pay the alternative capital gain tax on the net capital gain of $825.00.
2. It is assumed that the 1944 personal property tax accrued in 1944 and is deductible in computing 1944 net income for Federal income tax purposes.

BOOK REVIEWS

HERBERT E. MILLER

Business Leadership in the Large Corporation. Robert Aaron Gordon. (Washington: Brookings Institute, 1945. Pp. xiv, 369. $3.00.)

Adam Smith's "Invisible Hand" is presumed to guide the flow of our human and natural resources into channels which maximize our economic welfare. This book is an analysis of the imperfect human instruments which carry out the orders of the ghostly guide. The study is limited to the leadership function in "the giant corporation, which has in many respects become the dominant type of business enterprise in the United States" (p. 3). The supporting data are taken from the operations of those corporations with assets in excess of $50 millions, around the year 1935. The author is rather severe in scolding the economist for the unrealistic assumptions made in the classical analysis of the entrepreneur's function, but this interesting survey reminds us that these assumptions are not so much unreal as overly simplified. We need to be reminded that "It is unreal to assume that business leadership is nothing more than a clearly defined channel through which the impersonal market forces of supply and demand work out their preordained results" (p. 267).

After a careful definition of business leadership, the author spends the major portion of his time on the distribution of the leadership function among the various inside management groups and the outside interest groups. A liberal sprinkling of case studies, from articles in *Fortune* magazine and the files of the Harvard Graduate School of Business Administration, as well as the five foot bookshelf of the T.N.E.C., makes for interesting reading and undeniable evidence of the complexity of the problem. No easy organization chart can describe the great variety of distributions of responsibility which characterize our giant corporations. Generalizations are dangerous, although it seems clear that there is a strong trend toward the professionalization of business leadership.

The leadership function is examined in its various manifestations, from the stockholders to the lower levels of middle management. The board of directors, per se, has declined in importance, although the influence of individual directors may be as powerful as it is hard to measure. The recent book by John Calhoun Baker, *Directors and their Functions*, is a good companion piece to read with the publication under review. The giant corporation evidently calls for leadership by group action—the ubiquitous committee—rather than by stroke of genius in the individual. The loss in brilliance is compensated by the reduction in mistakes. There is still room for the individual who is chief executive, but his prime function becomes one of coordinating the complex activities of the large corporation.

Leadership shades off into influence, hence some attention is given to the role of various interest groups in affecting the major decisions of the company leadership. The relative influence of bankers has been declining while the influence of labor is rising. When the number of suppliers or customers is small, they can no longer be treated as an amorphous, impersonal mass in the market. The government has taken various negative and positive roles in business leadership (from the ill-fated NRA experience to more recent wartime seizures and operations).

The last third of the book, which covers incentives and the professionalization of business leadership, casts some doubt on financial incentives as the most effective device for inviting the maximum effort. Perhaps the emphasis on data for 1935 may be responsible for the conclusion that security and stability of income are more important to our business leaders than spirit of adventure and the possibility of a rich reward. The author admits his limitations in appraising the nonfinancial incentives which attract leadership talent, but he rightfully emphasizes their importance in any approach to the problem of effective guidance for social as well as economic welfare. We need this type of analysis as we enter the postwar era.

RICHARD L. KOZELKA

University of Minnesota

Economics. John Ise. (New York: Harper and Brothers, 1946. Pp. xi, 731. $4.50.)

As one of his many achievements, Professor Ise is noted for his reviews of books on principles of economics For some years, it could be confidently predicted that any new principles book would be reviewed by Professor Ise.

In the nature of things, any reviewer of principles texts is at a disadvantage. If he, himself, has already written a text, he is suspected of bias. And if he has not, he is suspected of not really being able to write a text as good as those which he presumes to judge. With the publication of *Economics*, however, Professor Ise is completely vindicated as one who can *do* as well as criticize. The book is in all respects admirable. It is easily the best text for the introductory student of economics that has appeared in many years.

I commend the book with these words of great praise not because it presents a particularly rigorous and refined treatment of price theory, nor because it includes authoritative analyses of the latest theoretical formulations, nor because it contains chromium-plated and streamlined versions of Keynesian doctrine or imperfect competition. It does none of these things. Rather I commend it because it covers interestingly and provocatively, yet with depth and perspective, the subject matter which the intelligent layman needs to know, and wants to know about economics.

No student will emerge from a reading of this book a master of modern economic analysis. Professor Ise himself recommends that economics and business majors "should, of course, have additional and more intensive work on value." On the other hand, any student who completes a careful reading of this text will as a result have a keener perception of the economic system—what it is, how it operates, and what are its problems. And the nice thing about it all is that, at the same time,

the student will be intrigued by the fascinating subject-matter, the delightful touches of wisdom and humor, and the clear and interesting literary style.

Professor Ise has made no attempt to draw a formal line of demarcation between principles and problems. The two are presented in such a way as to throw the greatest light on both: the principles explaining the problem and the problem illustrating the principles. On most topics, the discussion is pointed up by a frank, judicious, and illuminating analysis of the social implications. A few section headings selected at random indicate the nature of these discusssions.

> The Waste of Our Land Resources.
> The Problem of Race Deterioration.
> Social Significance of Giant Combination.
> Prices and Aesthetic Ideals.
> Wastes in the Marketing System.
> General Appraisal of Labor Unions.
> Rent as Unearned Income.
> Standardization of Life.

The latter part of the book on "Capitalism," "The Other Isms," and "War and Peace" is particularly rich in social criticism.

The book is unusual in format. It contains 693 large pages. (The pages are approximately 7×10¼ inches whereas the average book page is about 5½×8½ inches.) The printing on each page is divided into two columns, the total number of words on each page being about the equivalent of that on two ordinary pages. Thus, the length of the book as a whole is about equal to that of a conventional two-volume principles text.

The book is liberally annotated with references to a great variety of sources ranging from Aristotle to Alfred Marshall, George Bernard Shaw, Will Rogers, and Pearl Buck. The bibliography is extremely well chosen, and deserves special notice.

Finally, I should like to recommend to all the reading of Professor Ise's section "The Fullness of Life" (page 168).

HOWARD R. BOWEN

New York City

Accounting Manual for Small Cities of the State of Washington. Arthur N. Lorig. (Association of Wash. Cities, 1946, Pp. xiv, 154. $1.50.)

The *Accounting Manual for Small Cities of the State of Washington* by Dr. Arthur N. Lorig, C.P.A. and professor of accounting at the University of Washington, is the result of a cooperative project sponsored by the Bureau of Governmental Research of the University, the state Division of Municipal Corporations and the Association of Washington Cities. The manual is intended to be "a standard reference and guide," rather than a legally prescribed accounting system, for the clerks and treasurers of the third and fourth class cities of Washington (those under 10,000 population).

Washington statutes require annual municipal reports to the state, audits by state examiners, and to some extent a municipal budget system; but these desirable requirements have often been difficult, particularly for new officials, to comply with because of the lack of written accounting instructions. The manual supplies this missing link and also ties together the many procedures and forms which have been prescribed, approved or suggested by the state in the past.

The 154-page manual is divided into chapters on funds, accounting for cash received, accounting for cash disbursed, ledgers, the budget, and reports, reconciliations and special accounting. It includes 64 sample forms of accounting documents and records. The "special accounting" covers cemetery operations and accounting for delinquent local improvement assessments (particularly important in a state where assessment liens are separate from general tax liens and special assessment borrowing is usually not secured by the full faith and credit of the municipality).

As stated in the preface: "the manual does not present a complete double entry system of accounting because many clerks and treasurers lack the technical training necessary to operate such a system. However, it is felt that the procedures outlined do provide sufficient financial information together with a satisfactory check as to the accuracy of the accounts, especially when supplemented by the comprehensive annual report required by the Division of Municipal Corporations. . . . The accrual method of accounting is not provided in the manual, since the state law virtually requires cash accounting for budget operations. Accounting for municipally owned utilities is also omitted except for certain forms and procedures, for special manuals covering their operations are already in use."

The classification of funds follows the outline suggested by the National Committee on Municipal Accounting, with some modifications to suit statutory requirements in the state of Washington. The author has done a good job, with simple and precise language, in describing the funds and their operations. The forms and procedures suggested are derived mainly from the best current practice in the state, with some short-cuts, but no real sacrificing of essential information. The "system," in other words, is highly practical and constitutes a rather complete single-entry set-up. The "object" classification of expenditures (with its three headings of 1. salaries and wages; 2. maintenance and operation; and 3. capital outlay) is theoretically defective in that it mixes "object" and "character" concepts. However, this classification probably was established by an existing budget statute and could not be changed without amendment of the law; and its acceptance in the manual is further evidence of the practical nature of the manual.

C. C. LUDWIG

University of Minnesota

Cost Accounting. W. B. Lawrence. (New York: Prentice-Hall, Inc., 1946. Pp. xv, 606. $4.00.)

This revision of a well-known text shows evidence of painstaking effort directed to the rearrangement and the re-editing of material from its predecessors; in addition, there is also a certain amount of new writing. Thus, the book is "new" in the sense that the table of contents does not resemble more than superficially those of the earlier editions.

Although the subject matter is not formally divided into parts other than chapter headings, it seems to the reviewer that the content of this volume consists of three parts:

1. The mechanics of conventional process and specific-order cost systems (Chapters I-XIV).
2. A survey of the calculations that can be made in connection with various situations and problems (Chapters XV-XXV).
3. A discussion of some broad overall issues having to do with costs in general (Chapters XXVI-XXX).

In the first part of the book, the reader is rapidly oriented to unit-cost calculations. Chapter I presents certain definitions and describes the general and subsidiary ledger classifications which might be found in use for a manufacturing enterprise. The second chapter introduces the concept of departmental cost and relates it to some of the elementary cost-finding procedures. Chapter III, entitled "Unit Costs," presents the problem of measuring the physical output in terms of which costs are to be expressed, and discusses certain forms of subsidiary ledger accounts and the voucher register procedure. The fourth chapter deals with the process cost system on the assumption that the process and the department are co-extensive. The ten chapters which follow are concerned with specific-order costing methods.

The second part of the discussion begins with Cost Estimates (XV), and The Budget as a Basis for Cost Control (XVI), to lead up to an extended discussion of Standard Costs (XVII, XVIII, XIX). There are two chapters on Control of Distribution Cost (XX, XXI), one dealing with Joint Products, By-Products and Associated Subjects (XXII), one on Specialized Cost Treatments (XXIII) and one concerned with Graphic Charts (XXIV). This part of the book concludes with a chapter on Reports for Executive Direction (XXV).

There are three entirely new chapters in the third part of the book: Cost and Volume Production (XXVI), Capacity Costs (XXVII), and Cost Relationships (XXVIII). The chapter on Uniform Methods appears unchanged from the previous edition and the one on Advantages for Auditing is the same as before, except for the addition of some materials on standard costs in auditing. There are two appendices, the first of which contains a large number of problems; the second presents two practice sets, one of the process-cost variety, and one (more extensive) specific-order case.

The overall viewpoint of the book is conventional; the first two parts of it, and much of the third, are devoted to subjects and procedures that ordinarily appear in cost-accounting texts. Although there are some minor differences between this and other books in the field as to the order of presentation of material and the particular methods recommended, these do not in the main involve marked departure from the conventional pattern. As textbooks in this field go, this book must be conceded to have one of the better descriptions of conventional procedures in that still inchoate area of relations between accounting and management. The reviewer's disappointments arise, not so much from this particular book, but from the general lack of progress toward bringing textbooks more nearly to bear on the essential issues of cost analysis related to the management process. Too many books have already told what *is* done in cost accounting systems; the story that needs to be told is what *can* and *ought* to be done to achieve results of real significance to the kind of decisions managers must make.

In the first chapter of the book (p. 1) the following objectives are stated:

"In the study of cost accounting, the student should learn (1) how to operate a cost accounting system, (2) what are the meanings of costs and how they are used in the management of a business, and (3) the application of economic principles to management through the use of cost data. This work has been planned to develop in an orderly and logical manner the student's understanding of cost accounting in these respects."

However well the first objective has been met, the second appears to have been but partially attained; the third one seems to have been lost in the heavy emphasis that is given to procedures and methods. Although there is a complete chapter devoted to fixed and variable costs, no reference is made to the concept of incremental (marginal or differential) cost. The notion is implied at various points, but it is never brought out to show its real importance to managerial alternatives and decisions. Indeed, the hyperbolic unit-cost curve is presented with the statement: (p. 394) "Such a curve is one in which the unit cost constantly tends to reach zero, but never quite reaches it. The hyperbola may be considered as the typical curve of unit costs in connection with quantities or volumes and can be used to illustrate many cost conditions or to explain the operation of cost theory." This statement is inaccurate, and it emphasizes the *mixture* of cost-influences instead of the basic forces that are at work. The hyperbolic cost curve—even as it is drawn in chart 24, p. 395—does not constantly or otherwise approach zero; rather, it is asymptotic (under certain simplified conditions assumed in the text) to the "continuing cost per unit" (really a constant incremental cost) which was described on p. 382 as "the uniform cost of the article as repetitively produced." Moreover, the hyperbolic shape of the average cost curve under these simplified conditions indicates, at the most, only that some part of the total cost is unaffected by changes in the independent variable—output, size of product, length of run, or whatever else may be chosen as such. The shape of the curve merely shows that some costs are unaffected by (i.e., are unrelated to) *changes* in the rate of activity. The frequently encountered fact that cost may consist of mixtures—of these, fixed and variable cost is only one case—is ample reason for recognizing specifically the nature of the component elements which go to make up typical cost-aggregates (such as an average unit cost). And, if cognizance is taken of the difference in viewpoint between management and financial accounting, these components are of the highest importance. There should be reference to such classifications as incremental (as separate from residual), recoverable (in

contrast to "sunk"), replacement (as compared with historical), alternative (as distinguished from inescapable), urgent (versus postponable), operating (as opposed to "shut-down") costs. These distinctions are important in the field of managerial decision, and the mere computation of normal or other forms of average unit cost does not fit the problem nor meet the need of management. This does not imply that the aims of financial accounting and of management are in opposition, nor does it suggest that unit costs are bad. It merely recognizes that there may be *different* ways in which data ought to be analyzed when different questions are raised.

The chapter on Capacity Costs seems to make no mention of the problems related to multiple-shift operations designed to keep the plant facilities in use for longer than the normal working day. But maximum capacity is defined as follows: "When the demand is such that a factory can sell all the goods that its plant can produce without idleness or loss of production, it is operating at maximum capacity. Such a condition is seldom attained because of the necessary losses due to maintenance and other delays that prevent complete operation" (p. 399). The accounting entries for capacity costs are dismissed with the statement: "Capacity costs may be used as statistical records or they may be incorporated in the general books. If entered on the books, the procedure is the same as in accounting for standard costs. Costs are recorded at actual amounts, and the differences between them and the capacity costs are carried to accounts similar to the variance accounts used to record standard costs. These accounts are carried *to Surplus* at the fiscal closing" (pp. 406–7, italics added).

Some rather curious cost-formulae are presented in the exposition of cost relationships (Chapter XXVIII). These do not appear to be altogether clear in their development, so far as the reviewer has been able to find. The illustration on pp. 419–20 is a case in point. Here are given the total costs of a number of orders for different sizes of a product. From the average cost "per unit" of the 227 orders is deducted the known preparatory cost of $40 per order; the remainder, divided by the simple unweighted average of sizes is supposed to represent the "cost per square inch due to size." This factor, multiplied by the size of the product and added to the preparatory cost is the "scale rate." This computation seems to the reviewer to be arbitrary and confusing; for, if the preparatory cost per order is multiplied by the number of orders in each size, and this product subtracted from the total cost to obtain the average running cost, the following results are obtained: (see table)

1	*2*	*3*	*4*	*5*	*6*	*7*
Size in sq. in.	*Number of orders*	*Total Cost*	*Preparatory Cost*	*Net Running Cost*	*Total Area*	*Running Cost per sq. in.*
5	40	$ 1,764.00	$1,600.00	$ 164.00	200	$ .820
15	25	1,157.50	1,000.00	157.50	375	.420
25	20	1,305.00	800.00	505.00	500	1.010
35	17	1,207.00	680.00	527.00	595	.886
45	15	1,121.25	600.00	521.25	675	.772
55	25	2,272.50	1,000.00	1,272.50	1,375	.925
65	15	1,567.50	600.00	967.50	975	.992
75	40	4,492.00	1,600.00	2,892.00	3,000	.964
85	20	2,030.00	800.00	1,230.00	1,700	.724
95	10	1,040.00	400.00	640.00	950	.674
Totals	227	$17,956.75	$9,080.00	$8,876.75	10,345	

Data in columns 1, 2, 3, and 6 taken from the text illustration.
Column 4 shows the preparatory cost per order, multiplied by the number of orders in the respective size-classes.
Column 5 items are obtained by subtracting corresponding items in column 4 from the relevant total cost items in column 1.
Column 7 is the result of dividing net running cost (column 5) by the total area as given in column 6.
The weighted average running cost per unit of "area" is $8,876.75÷10,345, or $.85807; the range of the individual averages for different sizes is from $.420 to $1.010, or $.59, or about 69% of the weighted mean value, of which 51% lies below and 18% lies above the mean. The weighted average running cost thus does not appear to be a very significant measure of the relationship between size of product and the running cost.

To interpret the results thus shown, it would seem quite possible that there might be some variation in the preparation cost per order over so large a range of sizes; the $40 average seems a bit unrealistic. But even if the preparation cost of $40 per order is correct, the length of run (number of product units processed on each order) would have considerable bearing on the cost per order as well as the product cost per unit. The difficulty seems to lie in the use of a total area computed as the product of the number of orders and the size rating; as used, the figures for total area imply that each order was for one unit of product. The use of such a factor as this throws out of the calculation at least one factor of considerable significance, which factor might explain the wide variation in the individual average running costs per square inch. In the form in which they appear in the text, the computed averages are but very rough and crude approximations, if indeed they really do indicate significant cost-relations.

The source of difficulty in this, as in many other cost calculations, is that almost religious zeal with which cost accountants identify their "normal average cost" figures as *facts*—imbuing those figures with a "reality" and fundamental "validity" which ought never to be ascribed to any calculation, however precise or abstruse. This confusion of estimate with fact appears frequently in cost textbooks; in the book under review it appears explicitly on page 397: "Among the purposes for which costs may be used are (1) to secure the *actual* costs of orders, inventories, and operations, as explained in the earlier chapters of this work . . . " (italics added).

The mere estimatory nature of unit cost calculations, no matter of what kind, is not the only point involved here. The crux of the issue is the *use* that is made of such computations. In the text, the average relationships among average costs (such as those described in the illustration) are developed into relatives called "scale values"; these, presumably, may be used for establishment of selling prices of the products. On page 423 appears the following: "Prices may be established or changed in a scientific, yet simple, manner by applying selling rates per unit of value to the ratio values of different products or kinds or sizes of a product." Further, under the heading of Associational Uses (p. 425) it is stated that "When a table or scale of relative values for the products of an industry can be compiled

and put into general use for pricing purposes, the effect is to give free play to the forces of supply and demand and to the modifying effects of competition and cost knowledge, while checking the evil of ignorant pricing. While all members of the industry are using the same relative values as a basis for their prices, they are free to use whatever selling rates they may choose. In this manner, freedom of competition is maintained because there is no control over selling rates."

This approach to the price problem leaves much room for speculation in the mind of anyone who, in the light of our recent experience with such things, has some doubts as to the merits of "formula-pricing." If the members of an industry will accept the scale values for factory cost, why will they not accept similar scales for selling rates? And, if they do, will the prices that result be better or worse prices—and for whom? The book says that (p. 424) "Selling prices are affected in part by supply and demand, in part by competition, in part by cost, and very largely by ignorance of values." Whatever may be said for the importance of supplying cost-information to those who cannot (or will not) get it for themselves, price patterns established by such means may engender some important repercussions; some of these repercussions may not be at all acceptable to those who espouse a belief that an economic system based on some measure of free enterprise is to be preferred to one of complete centralization of control in the political organization.

It should be emphasized that the reviewer has no special case to argue against specific writers or particular books; this volume is doubtless no more deserving of criticism on the grounds presented here than are other books now in print and perhaps in process. However, all these issues are basic and of great importance; they need to be considered with *special* care in the preparation of materials that are intended for uninitiated and uncritical minds of college students.

WILLIAM J. VATTER

The University of Chicago

Industrial Relations and the Social Order. Wilbert E. Moore. (New York: The Macmillan Co., 1946. Pp. viii, 555. $4.00.)

This book is a contribution to the now rapidly developing field of industrial sociology. Essentially what it does is to weave together material from such diverse fields as business management, industrial psychology, trade unionism, economics, and social theory. As a result it will probably be impossible for any specialist in the social sciences to read this work without noting much material that is so fundamental to his own field that its presentation will seem almost trite. Yet the specialist at the same time will be introduced to a wealth of ideas in other fields which will seem novel and brilliant along with a most interesting synthesis.

Professor Moore ably justifies his work upon the basis that "modern industry has rarely been viewed as a complex social organization and pattern of relations; and in the few outstanding cases that such a view has been taken the "internal" structure of industry has not been set within the society with which it is in constant interaction" (p. vii). "If the social scientist in industry has any virtue it is chiefly that of "seeing industry whole" as a functioning organization made up of people in various official and unofficial relationships, and as an organization which is in some way or other related to other organizations, to the community, and to society as a whole" (p. 5).

The author's task then is first to investigate the industrial plant as a multifaceted social organization and lastly to review the relationship of industry to society. The first task is accomplished by drawing together a large amount of diverse material and effectively organizing it. Industrial organization is viewed initially from the standpoint of management and then from the standpoint of labor. Here the problems of "blueprint" organization as contrasted with basic human relationships are discussed and valuable insights into the nature of the motivation of the participants in industry are given. The author's contention is that human behavior and social relationships are capable of being understood. No attempt is made to develop a body of social theory as a complete unity, but rather the author attempts to utilize certain basic principles of social organization and social relationships to analyze industrial life. Following this section on industrial organization is one on industrial relations which reviews the well-known facts of labor organization, collective bargaining, and industrial conflict. Here, interpretation by the author does not seem to maintain the level achieved in the rest of the work.

The second task of the author, to review the relation between industry and society, involves much that is novel to the non-sociologist. After discussing the industrial community and social classes and the industrial order the author then proceeds to some interesting reflection on the social control of industry and the role of economic planning. To economists who are now bitterly engaged in debating the place of planning in modern society, Professor Moore's ideas, originally published in several articles in the *Journal of Legal and Political Sociology*, should be of considerable interest. Essentially Professor Moore believes that any society has a fairly clear hierarchy of values so that in the case of conflicts of objectives for planning, priorities can be assigned. Also he feels that while problems of responsibility in a planned economy are great, the preservation of liberties within a controlled economy is in large part an administrative question that can be squarely met. While debate will rage around these points, Professor Moore's concluding note that dichotomies and dilemmas in social affairs are generally false and that we do not face any choice between a completely free economy and a completely controlled one, but rather a choice between a multitude of intermediate possibilities, should at least be a point to which the less bitterly engaged combatants can subscribe.

A. MORGNER

University of Colorado

Practical Management Research. A. R. Wiren and Carl Heyel. (New York: The McGraw-Hill Book Co., Inc., 1945. Pp. vii, 222. $2.50.)

The opening sentence of this book accurately fore-

casts what it does: "discusses the USE of scientific research techniques in business." It is "designed to develop a pattern of thinking (part one, 162 pp.) and to demonstrate applications of systematic thinking to actual cases" (part two). It tries to impress upon three types of executives, viz., staff administrator of research, top administrator of a complex organization, and the divisional head, the constant need for specialized attention devoted to evaluating the effects of the shifting sands of external and internal conditions. Such a responsibility is expected to expose and appraise the "exceptions" and to anticipate "danger signals."

Research is said to mean "searching for a specific solution to a given problem," but should include creative thinking leading to recognition and stating of new problems, the determination of sound over-all objectives, and the development of formulas, plans of action and follow through.

Readers familiar with the literature and manuals of method simplification, operation analysis, and the brilliant procedures developed by the Training Within Industry (TWI) program will recognize the best of those techniques, properly briefed, in this book's recommendations of procedural steps and analytical check questions. This is all to the good, of course, for the core of those techniques should now reach a broader range of executives, who will surely recognize the possibilities of economical application of them.

This reviewer believes that the book is weakened a bit by the use of the character "the research man." The work developed for him establishes job criteria that will confound the effort to match them with a man whose salary can be justified in the typical executive structure. Moreover, the case studies in part two tend to emphasize the conference approach to applied systematic thinking. However, the vital importance of careful personnel relations at every step in a research program is properly emphasized; also the fact that the research activity is essentially one of coordinating the specialized knowledge and timely cooperation of all functional heads. Hence the authors fully anticipate the probable, practical development of research programs in most companies. They also recognize the place of the outside consultant and show that his work will be much more effective where the stage has been set for him, and essential liaison service provided by an internal research officer.

It is to be hoped that the use of the risky but accurate term RESEARCH will not frighten or prejudice prospective readers, for the academic flavor is a hurdle; and this book deserves a good management following. It is not a management text, though it sets forth sound management principles for certain functions; it is not a complete technical handbook of research techniques, though it proposes sound general principles and detailed guiding steps; and it might have been much stronger in specific guidance to executives who undertake conscientious research without the services of a "research man." If research is as important to businesses as suggested (and we agree), and if a considerable number of managements should be moved to act, it is apparent at once that competent research personnel would not be available for the demand. The swarm of inevitable bluffers should be warned against, and criteria of investigation of alleged talent should be suggested.

Having ventured these friendly suggestions, we are in hearty approval of the accomplishments of the book. The serious executive and student who maintain a schedule of technical study will find a great many helpful aids packed into a few well written pages.

A. B. Cummins

University of Pennsylvania

Ohio C.P.A. Problems and Solutions 1940–1944. William E. Dickerson, William B. Jencks and Richard C. Rea. (Columbus, Ohio: Ohio State University Book Store, 1946. $7.50).

As revealed by its title, the book is a collection of the practical problems found in the examinations given by The Ohio State Board of Accountancy over a five-year period. The authors' solutions "are presented in more detail than would be required or feasible under examination conditions," the objective being to make the material more useful to the student-candidate.

If a problem raises unusual, difficult or controversial points, the authors comment accordingly. For instance:

" 'How and where to start' is the only real difficulty encountered in the solution of this problem. It is possible that many candidates spent so much time in arriving at a satisfactory approach that they were unable to complete the solution.

"The first steps should be the analysis of data given and the allocation of costs to departments for the purpose of determining departmental burden rates and unit costs. The adjustment of the book inventory of raw materials to reflect the physical count is the only additional fact to be considered in this connection. The correct reassembling of data is the key to a satisfactory solution."

Some comments run to considerable length.

Without question, the material should prove helpful to accounting students and C.P.A. examination candidates of any state.

Herbert E. Miller

University of Michigan

UNIVERSITY FACULTIES IN ACCOUNTING*

MIAMI UNIVERSITY

Professor:	
R. E. Glos (Dean)	Ph.D., C.P.A.
Associate Professor:	
C. R. Niswonger (Act'g Head)	M.S., C.P.A.
Keith S. Burton	M.B.A.
Assistant Professor:	
Donald L. Heinemeyer	M.A.
Instructor:	
William A. Terrill	B.B.A., B.S.

UNIVERSITY OF TEXAS

Professor:	
G. H. Newlove	Ph.D., C.P.A.
C. Aubrey Smith	Ph.D., C.P.A.
John Arch White (Chairman)	Ph.D.
Assistant Professor:	
Halsey N. Broom	M.B.A.
Frank D. Graydon	M.B.A., C.P.A.
Charles T. Zlatkovich	M.B.A.
Instructor:	
Miss Joy Adams	M.B.A.
Neil K. Alexander	B.B.A.
Louis F. Baethe	B.B.A.
Glenn Roy Doughety	B.B.A.
E. E. Fink	M.S.
Arthur Greenspan	B.B.A.
Elton B. Hale	M.A.
Richard L. Hays	B.B.A.
Morgan Hunter	B.B.A., C.P.A.
R. E. Manning	M.B.A.
Ira E. Steele	B.B.A.

STANFORD GRADUATE SCHOOL OF BUSINESS

Professor:	
J. Hugh Jackson (Dean)	M.B.A., LL.D., C.P.A.
Associate Professor:	
J. Knight Allen	M.B.A., Ph.D.
Barrett F. McFadon	M.B.A.

UNIVERSITY OF ALABAMA

Professor:	
Chester H. Knight (Head)	M.A., C.P.A.
S. Paul Garner	M.A., Ph.D., C.P.A.
Associate Professor:	
George Lafferty	M.B.A., C.P.A.
William Whitney	M.A., C.P.A.
Assistant Professor:	
Bruce Futhey	M.A., C.P.A.

* Similar lists from other schools will be published as fast as received. It will be helpful in reestablishing a column of "Personal News" if department heads will enclose items of news along with their faculty lists.

UNIVERSITY OF MISSOURI

Professor:	
DR Scott (Head)	Ph.D.
Royal D. M. Bauer	M.B.A., C.P.A.

HARVARD GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

Professor:	
Thomas Henry Sanders (Head)	M. Com., Ph.D.
Arthur Warren Hanson	M.A., LL.B., Litt.D.
Windsor Arnold Hosmer	M.B.A.
Clarence Bentley Nickerson	M.B.A., D.C.S.
Ross Graham Walker	A.B.
Associate Professor:	
Russell Herman Hassler	M.A., C.P.A.
Leo Anton Schmidt	M.A., C.P.A.
Assistant Professor:	
Robert Newton Anthony	M.B.A.
James Kaull Hart	M.B.A.
Instructor:	
Thornton Frederick Bradshaw	M.B.A.

UNIVERSITY OF CALIFORNIA AT BERKELEY

Professor:	
Perry Mason (Assoc. Dean and Head)	Ph.D., C.P.A.
Associate Professor:	
Charles C. Staehling	M.S., C.P.A.
Assistant Professor:	
Leonard A. Doyle	Ph.D., C.P.A.
Catherine DeMotte Quire	Ph.D.
Lecturer:	
Olof Lundberg	C.P.A.
Lawrence L. Vance	M.A., C.P.A.

UNIVERSITY OF CALIFORNIA AT LOS ANGELES

Professor:	
Howard S. Noble (Dean)	M.B.A., C.P.A.
Ira N. Frisbee (Head)	M.B.A., C.P.A.
Associate Professor:	
Wilbert E. Karrenbrock	Ph.D.
Lecturer:	
Harry Simons	M.A., C.P.A.

UNIVERSITY OF PENNSYLVANIA

Professor:	
Thomas A. Budd (Chairman)	M.A.
George A. MacFarland	M.A.
Associate Professor:	
Arthur T. Cameron	M.A., C.P.A.
Carl T. Devine	M.B.A., Ph.D.
Oscar S. Nelson	M.A., Ph.D.
Assistant Professor:	
Adolph Matz	M.A., Ph.D.
Arthur D. Maxwell	B.S., C.P.A.

Instructor:

Jerome Bennett	B.S.
Robert G. Cox	M.B.A.
Kenneth T. Delvalle	B.S.
Richard G. Moore	B.S.
Gordon V. Moyer	B.S.
Stanley E. Ross	B.S.
C. Melvin Sonne, Jr.	B.S.
William S. Woods, Jr.	B.S.

OHIO STATE UNIVERSITY

Professor:

Hermann C. Miller (Chairman)	M.A., C.P.A.
George W. Eckelberry	M.A., C.P.A.
Jacob B. Taylor (Bus. Mgr.)	M.A., C.P.A.
Russell S. Willcox	M.A., C.P.A.

Associate Professor:

William E. Dickerson	M.B.A., Ph.D. C.P.A.
J. Brooks Heckert	M.A., D. Com., C.P.A.

Assistant Professor:

Walter C. Burnham	M.A., C.P.A.
Wilford J. Fleig	B.S.C., C.P.A.
William J. Jencks	M.A., C.P.A.
James McCoy	M.B.A., C.P.A.
Daniel M. Shonting	M.A., C.P.A.

Lecturer:

Dallas S. Bolon	B.S., C.P.A.
Walter D. Wall	C.P.A.

Instructor:

Mabel Allan	B.S.
R. Carson Cox	M.A.
Felix R. Konkle	B.S., C.P.A.

UNIVERSITY OF COLORADO

Professor:

Greer Gilbert Fullerton (Head)	M.S., C.P.A.
Hazen W. Kendrick	M.S.

Assistant Professor:

Vinton S. Curry	M.S.

Instructor:

Herman I. Arenson	B.S., C.P.A.
Kenneth H. Foote	B.S.
Robert S. Wasley	M.S.

LEHIGH UNIVERSITY

Professor:

Roy B. Cowin (Head)	M.A.
Carl E. Allen	Ph.D.

Assistant Professor:

Harry J. Burton	M.S.
Alfred P. Koch	M.S.

INDIANA UNIVERSITY

Professor:

Alva LeRoy Prickett (Head)	M.A.

Associate Professor:

Ingvald Walfred Alm	Ph.D.
Geoffrey Loren Carmichael	M.A., C.P.A.
D. Lyle Dieterle	M.S., C.P.A.
Stanley Arnold Pressler	M.B.A., C.P.A.
Robert Ellsworth Walden	M.A., Ph.D., C.P.A.

Assistant Professor:

J. Virgil Herring	M.S.
R. Merrill Mikesell	M.S., C.P.A.
Robert Richardson Milroy	M.A., Ph.D., C.P.A.
David William Thompson	M.S., C.P.A.

Instructor:

Marilynn Ann Whitmyer	B.S.

UNIVERSITY OF NORTH DAKOTA

Professor:

R. D. Koppenhaver	M.S.C., C.P.A.

Assistant Professor:

Thomas Thorliefson	M.S.C., C.P.A.

Instructor:

Thomas J. Clifford	B.S.C.
Louis J. Kulas	B.S.C.

UNIVERSITY OF ILLINOIS

Professor:

H. T. Scovill (Act'g Dean and Head)	A.B., LL.D., C.P.A.
H. Heaton Baily	M.A., C.P.A.
Edward J. Filbey	Ph.D., C.P.A.
A. C. Littleton	Ph.D., C.P.A.
Lloyd Morey (Comptroller)	A.B., B. Mus., LL.D., C.P.A.
Charles F. Schlatter	M.S., C.P.A.

Associate Professor:

Robert P. Hackett (Assoc. Dean)	Ph.D.
Hale L. Newcomer	Ph.D., C.P.A.
E. L. Theiss	Ph.D., C.P.A.

Assistant Professor:

Ralph L. Boyd	Ph.D., C.P.A.
H. E. Breen	M.S.
J. M. Carrithers	Ph.D., C.P.A.
Robert I. Dickey (Asst. Dean)	Ph.D., C.P.A.
C. J. Gaa	Ph.D., C.P.A.
C. A. Moyer	Ph.D., C.P.A.
William E. Thomas	Ph.D.
Nelson D. Wakefield	M.S., C.P.A.

Instructor:

L. R. Huff	M.S.
Charles H. Pratt	A.B.
G. G. Yankee	M.S.

Assistant:

A. H. Asay	B.S.
K. B. Berg	M.S.
M. A. Binkley	B.S.
G. D. Brighton	B.S.
R. L. Brummet	B.Ed.
J. O. Eaton	B.S.
R. J. Helwig	B.S.
R. M. James	B.S.
Dorothy Litherland	B.S.
E. F. McBride	B.C.S.
G. K. Nelson	B.S.
R. L. Stallings	M.S.
Margaret Stewart	B.S.

TULANE UNIVERSITY

Professor:

Leslie James Buchan (Dean)	M.S., Ph.D., C.P.A.

Arnold Waldemar Johnson	M.B.A., C.P.A.
Paul Canaday Taylor	M.S., Ph.D., C.P.A.
Jay Calvin Van Kirk	M.B.A., C.P.A.
Instructor:	
Seymour Jacques Harris	M.B.A., C.P.A.
George Edwin Nunn	B.B.A., C.P.A.

UNIVERSITY OF SOUTHERN CALIFORNIA

Professor:	
George T. Altman	A.B., C.P.A., and Attorney at law
Frederick W. Woodbridge (Head)	M.B.A.
Associate Professor:	
R. J. Burby	A.B., C.P.A.
James S. Lanham	Ph.D.
Walter B. Meigs	Ph.D.
Assistant Professor:	
Robert J. Dinman	A.B., C.P.A.
S. M. Frizol	Ph.D.
Rex Ragan	M.B.A.
Lecturer:	
Howard W. Finney	A.B., C.P.A.
Robert P. Jones	B.S., C.P.A.
Val B. Lehnberg	M.B.A.
Henry W. Lewis	A.B., C.P.A.
Erwin P. Ludman	A.B., C.P.A.
L. Dean Petty	B.S., LL.B.
Teaching Assistant:	
James Holt	A.B.
Joseph Hyman	A.B.
George F. Nazarian	B.S.

UNIVERSITY OF IOWA

Professor:	
Harold B. Eversole	M.S., C.P.A.
Harry H. Wade	M.A., C.P.A.
Sidney G. Winter (Head)	M.S., C.P.A.
Associate Professor:	
William J. Burney	M.B.A.
Assistant Professor:	
Gilbert P. Maynard	M.B.A., C.P.A.

UNIVERSITY OF NORTH CAROLINA

Professor:	
Erle E. Peacock (Chairman)	M.B.A., C.P.A.
Associate Professor:	
Alton G. Sadler	M.S., C.P.A.
Robert H. Sherrill	M.A., C.P.A.
Instructor:	
Albert C. Gaskill	B.S.
J. P. Smith	A.B.

For a more complete coverage of

Business Budgeting and Control

By **J. BROOKS HECKERT,** *Associate Professor of Accounting, Ohio State University*

THIS new book, written primarily for students in the fields of accounting and management, is the outgrowth of the author's wide experience in developing budgetary procedures and in teaching the subject to college students. It covers principles, methods and procedures for the preparation and operation of budgets for all types of business, in both large and small concerns.

In this detailed treatment of budgeting Heckert tells how a budget may be used to stimulate, coordinate and correlate business effort as well as how to increase efficiency and control expense. He follows each topic through from the time the budget figures are constructed to the time when they are compared with the actual results, the variance analysis made, and the budget reports drawn up.

Ample review questions and budget problems are provided for practice study and they have been carefully correlated with the text to provide the utmost clarity in interpretation. The author makes use of a generous amount of illustrative material, much of which is drawn from actual successful practice.

***459 pages,* $6.00**

Contents

- Purpose of Budgeting
- Basic Considerations in Budgeting
- Determination of Policies
- Flexibility of the Budget
- Methods of Budgeting Sales
- General Business Conditions and the Sales Budget
- Market Research and Analysis
- Products, Prices, and Sales Methods
- Sales Policies and Program
- Sales Standards and Control
- Distribution Cost Budget—Objectives
- Distribution Cost Analysis
- Distribution Cost Standards
- Distribution Cost Budget—Method
- Advertising Budget
- Production Budget
- Production Cost Standards and Control
- Materials and Inventory Budget
- Labor Budget
- Manufacturing Expense Budget
- Plant and Equipment Budget
- Administrative and Financial Expense Budget
- Financial Budget
- Budget Summary and Reports

THE RONALD PRESS COMPANY
15 East 26th Street, New York 10, New York

Adopt for Your Classes

1946 EDITION OF

ACCOUNTING PRINCIPLES

BY J. HUGH JACKSON, M.B.A., C.P.A., LL.D.

» » » An eminent author, distinguished in the accounting field, and a publisher of national prominence in the field of modern business methods have created a first year college text that is practical, comprehensive, and up-to-date.

» » » The complete course includes a workbook of problems and two laboratory sets: retail merchandising, and manufacturing. The course features current federal and state legislation covering payroll tax procedure.

●

TEXTBOOK DIVISION

Charles R. Hadley Company

pathfinders IN ACCOUNTING EDUCATION

330 NORTH LOS ANGELES ST. • LOS ANGELES 12, CALIFORNIA

Other Offices: **NEW YORK . . . CHICAGO . . . DETROIT . . . ATLANTA**
SAN FRANCISCO . . . SACRAMENTO . . . SEATTLE . . . PORTLAND . . . HONOLULU

FUNDAMENTALS OF ACCOUNTING

By PERRY MASON, Ph.D., C.P.A.
Professor of Accounting
University of California

. . . stresses today's busines problems and techniques—taxes (sale, income, payroll), business procedures, and machine accounting.

. . . emphasizes accounting theory and its logical development.

ANNOUNCING ALTERNATE PROBLEMS

Supplementary Laboratory Problem Material is now available for Mason's FUNDAMENTALS OF ACCOUNTING. These highly practical and up-to-date problems will enable instructors to make a selection of material to fit individual requirements.

. . . points up importance of cost accounting.

. . . considers vocational and professional possibilities of accounting.

. . . includes abundant graded problems and questions designed to test for comprehension and application rather than memorization. Two practical practice sets, working papers, and a teacher's key are available.

. . . published in two editions—Edition A, with text and problems bound together, 735 pages, $4.25, and Edition B, with text and problems bound separately, $4.50.

. . . ample stocks of both editions are available.

Send for Examination Copies

THE FOUNDATION PRESS, INC.
222 West Adams Street Chicago 6, Illinois

TRAINING YOU CAN RECOMMEND WITH

Confidence . . .

● When you are asked to recommend an accounting course, the educational background of the International Accountants Society, Inc., will give you complete confidence. The five men composing our Executive Educational Committee are responsible for IAS educational policies and activities. The sixteen Certified Public Accountants composing the IAS Faculty prepare text material, give consultation service, or grade examination papers. Some give full time, others part time, to IAS work. Our Advisory Board consists of forty outstanding Certified Public Accountants, business executives, attorneys, and educators, who counsel with the IAS management, on request, about technical accounting, educational, and business matters.

The uniformly high caliber of these men is eloquent testimony to the quality of IAS training.

EXECUTIVE EDUCATIONAL COMMITTEE

JOHN T. MADDEN
C.P.A., B.C.S., M.A., Sc.D.
President, International Accountants Society, Inc.; Dean, School of Commerce, Accounts and Finance, New York University; Former President, American Association of University Instructors in Accounting; Former President, American Association of Collegiate Schools of Business.

DEXTER S. KIMBALL
M.E., LL.D., D.Sc.
Chairman, Board of Directors, International Accountants Society, Inc.; Dean Emeritus, College of Engineering, Cornell University; Former President, American Society of Mechanical Engineers; author of "Cost Finding," "Industrial Economics," and other textbooks.

LEE GALLOWAY
B.Sc., Ph.D.
Vice-Chairman, Board of Directors, International Accountants Society, Inc.; Former Chairman, Board of Directors, The Ronald Press Company; Former Director, Department of Management, New York University; author of "Office Management" and other textbooks.

GEORGE P. ELLIS
C.P.A.
Practicing Certified Public Accountant; Member of Faculty, International Accountants Society, Inc.; Former President, Illinois Chamber of Commerce; Former President, American Society of C.P.A.'s. Former Vice-President, American Institute of Accountants.

STEPHEN GILMAN
B.Sc., C.P.A.
Educational Director, International Accountants Society, Inc.; author of "Accounting Concepts of Profit," "Analyzing Financial Statements," "Principles of Accounting," "What the Figures Mean," and numerous technical articles on accounting and allied subjects.

FACULTY

Stanley E. Beatty, C.P.A.
Harold W. Boedeker, C.P.A.
George P. Ellis, C.P.A.
C. W. Emhoff, C.P.A.
Stephen Gilman, C.P.A.
John A. Hinderlong, C.P.A.
James W. Love, C.P.A.
Paul H. Moore, C.P.A.
Frank H. Murray, C.P.A.
T. N. Perry, C.P.A.
Russell C. Swope, C.P.A.
G. E. Taylor, C.P.A.
J. G. Terry, C.P.A.
G. S. West, C.P.A.
Harry G. Westphalm, C.P.A.
Earl R. White, C.P.A.

Additional information about this training will be sent to you in booklet form, on request.

INTERNATIONAL ACCOUNTANTS SOCIETY, *INC.*

A Correspondence School Since 1903

IAS

209 WEST JACKSON BOULEVARD

CHICAGO 6, ILLINOIS

Three Important Revisions

PRINCIPLES OF ACCOUNTING

Intermediate . . . 3rd Edition

By H. A. FINNEY, Ph.B., C.P.A. Member, firm of Baumann, Finney & Co., Certified Public Accountants; formerly Professor of Accounting, Northwestern University

Special features of the revision are two entirely new chapters devoted to basic theory, and a wealth of new, short, pointed problems.

In addition, this standard text, adopted by over 250 institutions, has been completely revised. It is now available for classroom use. 873 pages. College List, $5.00

Personal Progress Records, paper bound, 75¢

PRINCIPLES OF ACCOUNTING

Advanced . . . 3rd Edition

By H. A. FINNEY

This completely up-to-date text for all accounting courses features a new chapter on Consolidated Balance sheets, and numerous short problems.

Material on Consolidated Profit and Loss and Surplus Statements has been expanded, and theory is covered in greater detail throughout the book. College List, $5.00

Personal Progress Records, paper bound, 75¢

COST ACCOUNTING

3rd Edition

By W. B. LAWRENCE, C.P.A.

Completely revised, with ten new chapters, this outstanding text provides sound training in all modern cost accounting practices and procedures.

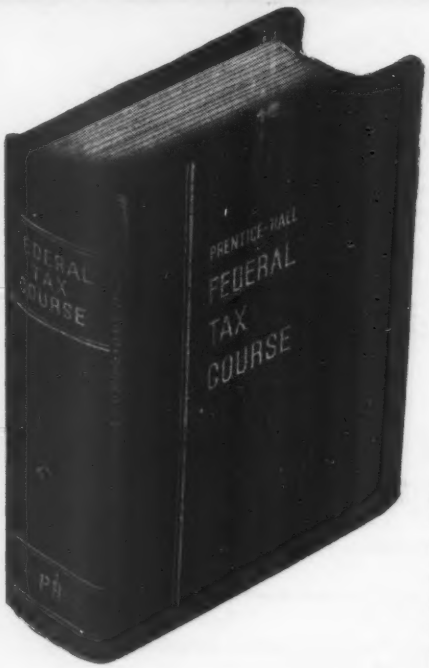
Noteworthy features are the avoidance of encroachments on associated subjects, a progression through departmental costs into process cost accounting, and the inclusion of general accounting materiel only as part of cost accounting.

576 pages. College List, $4.00

Send for your approval copies.

PRENTICE-HALL, INC. 70 FIFTH AVENUE, NEW YORK 11

America's Standard Tax Course



1946-1947

EDITION

COMPLETELY REVISED

AND-UP-TO-DATE

Over 95% of all American institutions offering a course in taxation use this text in preference to any other on the market.

It is an ever-reliable source of accurate, teachable information, reflecting all important aspects of the quickly-changing tax picture.

Wealth of Practical Problems

There are more than 500 problems in the text. They are divided into 30 Assignments, corresponding with the 30 Chapters. The problems are classified into the following groups: Fundamental Problems for Class Use—Supplemental Problems for Home Work—Star Problems to Develop Skill in the Preparation of Income Tax Returns—Cumulative Problems for Review and Examination.

INSTRUCTOR'S MANUAL—This valuable manual is sent, without charge, to the instructor when the Course is adopted. Apart from the abundance of helpful suggesions for putting the Course into operation, the manual also contains Solutions to all Problems in the text.

Federal Tax Procedures

Numerous phases of the procedural aspects of Federal taxation are included in this outstanding Course. Students are shown—how to prepare a claim for refund on form 843; steps to follow in arguing a proposed additional assessment; how to prepare a petition before the tax courts of the U. S.; and how to handle many other pertinent questions.

Comprehensive

In the 30 Chapters your students will find such material as: History of Federal Income Tax Law; Gross Income; Basis and Determination of Gain or Loss; Deductions; Pay-As-You-Go, Witholding, Collection at Source; Corporations; Assessment, Collection, Refunds; Social Security Taxes; Federal Estate Tax; Federal Gift Tax.

Send for Your 90 Days' Approval Copy Today—Write to Dept. A-468

PRENTICE-HALL, INC. 70 FIFTH AVENUE, NEW YORK 11

Outstanding
McGRAW-HILL BOOKS

PRACTICAL FINANCIAL STATEMENT ANALYSIS

By ROY A. FOULKE, Vice President, Dun and Bradstreet, Inc. *McGraw-Hill Accounting Series.* 619 pages, 6 x 9. Textbook edition, $4.50

This book has been written in response to a demand from businessmen and instructors for a practical, sound text on statement analysis. The material is divided into seven parts: the background of analysis, the analysis of small business enterprises, the internal analysis of balance sheets, the comparative analysis of balance sheets, analysis of profit and loss statements, analysis of surplus accounts, and a most interesting final chapter on the evolution and the limitations of accountancy.

ACCOUNTING METHOD

By C. RUFUS ROREM, formerly of the School of Business, The University of Chicago, and HARRY D. KERRIGAN, Northwestern University School of Commerce. Third edition. 774 pages, 6 x 9. $4.50

Here is an accounting text that is truly flexible, because it is admirably suited to students taking one course in accounting, and is also an excellent elementary text for students who plan to continue their study of accounting. The book is practical: explains both the "how" and "why" of accounting procedure. It is complete: presents a thorough thoughtful treatment of methods and problems. It is systematic: divides important subjects into well defined groups.

COST ACCOUNTING

By JOHN G. BLOCKER, University of Kansas. *McGraw-Hill Accounting Series.* 705 pages, 6 x 9. $4.50

This highly successful text is now generally regarded as one of the best books of its kind. Teachers agree that it admirably achieves its purpose: to give students a broad understanding of the fundamental problems of cost control and accounting as they apply to all types of business units and to the important divisions of each enterprise. Two series of practice sets, and solutions to the problems, are available.

ESSENTIALS OF COST ACCOUNTNG

By JOHN G. BLOCKER, University of Kansas. *McGraw-Hill Accounting Series.* 430 pages, 6 x 9. $3.25

Teachers have welcomed this abridgment of the author's *Cost Accounting* as particularly adapted for use with intensified courses. The material in the larger book has been condensed, reorganized, and simplified. The importance of cost control and budgeting are especially emphasized, in relation to industrial enterprises. At the same time, the problems of control and accounting for distribution and administrative costs receive full attention.

Send for copies on approval

McGRAW-HILL BOOK COMPANY, Inc.

330 West 42nd Street **New York 18, N.Y.**

FEDERAL TAX TRAINING

AUTHORITATIVE Federal Tax training—*to meet your individual needs*—is now available by the *ASBA Home Study Plan.* During spare time, you can obtain a competent knowledge and understanding of (1) *the entire subject of Federal Taxes,* (2) *Federal Income Taxes,* or (3) *simply a review or brush-up of Federal Income Taxes.*

The training material—published by a nationally recognized tax service—covers:

Background of the Federal Revenue System
The Code and Other Sources of the Law
Income Subject to Federal Taxing Power
Taxpayers; Rates and Exemptions
General Accounting Factors
Pay-As-You-Go; Withholding; Returns
Exclusions from Gross Income
Taxable Income
Inventories; Special Accounting Methods
Deductions in General; Expenses
Depreciation; Depletion; Amortization
Contributions; Interest; Taxes; Medical Expenses; Amortizable Bond Premium; Special Deduction for the Blind
Losses; Bad Debts
Recognition of Gain or Loss
Basis
Application of Installment Method to Sales and Exchanges
Capital Gains and Losses
Net Operating Losses; Losses Between Related Interests
Corporations: Rates, Exemptions and Classification
Special Surtaxes on Corporations; Tax Avoidance
Reorganizations
Corporate Distributions
Repealed Excess Profits Tax
Partnerships
Special Problems of Estates and Trusts
Foreign Income and Foreign Taxpayers
Deficiencies; Refunds
Gift Tax
Estate Tax in General; The Gross Estate
Deductions; Valuation; Credits; Rates; General Provisions
Excise Taxes in General; Processing Taxes; Taxes on Manufacture
Taxes on Sales; Taxes on Facilities
Taxes on Admissions, Dues, and Initiation Fees
Stamp Taxes; Taxes on Employment; Ceneral Excise Tax Provisions

You will also receive—as collateral working and reference material—the *Internal Revenue Code, Income Tax Regulations,* and specimen *Filled-in Tax Return Forms.*

Courses and Tuition

T1 Federal Income Taxes .....24 lessons—$54.00
T2 Federal Taxes .....34 lessons— 76.50
T3 Federal Income Tax Review ...16 lessons— 36.00

Each course runs for a consecutive number of weeks equal to the number of lessons—at the rate of one lesson a week.

Tuition—which includes all charges for *registration, materials* and *training*—may be paid in full at the time of enrollment or on the monthly payment plan. If the monthly payment plan is adopted, the monthly payment is $10.00. The registration fee, payable with application, is $12.00.

Accounting knowledge is essential.

Withdrawal Privilege

SHOULD you be unable to continue your training—within the prescribed enrollment period—you may make written request for withdrawal and the School will cancel your enrollment contract upon the following conditions: *In addition to the registration fee* (not refundable), *a charge for tuition will be made on the basis of the stated monthly payment for each month you are enrolled. Any balance due for tuition must be paid upon notification. If tuition has been paid in advance the unearned portion will be refunded. All instruction material must be returned to the School by express, charges prepaid.*

American School of Business Administration

Approved as a Correspondence School under the Laws of the State of New York

---

AMERICAN SCHOOL OF BUSINESS ADMINISTRATION
Box 125, Church Street Annex, New York 8, N.Y. .....194....

Gentlemen: Please enroll me in the following Federal Tax Course: .....
for which I agree to pay the tuition of $..... (including a registration fee of $12.00, payable herewith), as follows: ☐ In full with this application. ☐Monthly payment plan: *With this application* $..... *and the balance payable* $..... *on the ..... day of each month.* I will also pay express charges on training materials. (*School pays delivery charges if tuition is paid in full with application.*)

Name.....Age.....Position.....

Address.....City.....Zone.....State.....

Third Edition of . . . .

Intermediate Accounting

By **GEORGE W. COLLINS,** *Assistant Professor of Accounting, Northwestern University.* **A volume of the Complete Accounting Course,** *edited by* **DAVID HIMMELBLAU,** *Professor and Head of Department of Accounting, Northwestern University*

THIS practical text is designed for students who have had the equivalent of one year's instruction in general accounting. This new revised edition (1) emphasizes the accounting bases underlying income statements and balance sheets, (2) gives a full discussion of financial statements, stressing current practice, (3) includes new material on bankruptcy, reorganization, recapitalization, and partnerships, and (4) gives a new approach to the preparation of funds statements. Presentation follows the Northwestern University "unit lecture method"—text material, problems and questions cover the basic topics within the time available for a semester's work. Principles are first outlined and discussed; then the application to the specific topic is demonstrated through practical cases and illustrations. Solutions and answers to assigned questions visualize standard of performance expected. Punched for standard binder.

Contents

Accrual Basis and Cash Basis
Installment Basis
Statutory Basis
Going Concern Basis
Liquidation Basis
Balance Sheet
Income Statement
Analysis of Working Capital
Partnerships
Branches
Consolidated Statements
The Field of Accounting

303 pages, $4.25

THIS is one unit of a coordinated series of textbooks developed and proved in more than thirty years of classroom experience at Northwestern University, and used in over a hundred other institutions. Each unit offers definite teaching advantages; effects a distinct saving of time for student and instructor. The complete list of the series follows:

- **Fundamentals of Accounting**
- **Principles of Accounting**
- **Introductory Cost Accounting**
- **Intermediate Accounting**
- **Auditing**
- **Consolidated Statements**
- **Investigations for Financing**
- **Accounting Procedure for Standard Costs**
- **Mathematics for the Accountant**

THE RONALD PRESS COMPANY
15 East 26th Street, New York 10, New York

Fourth Edition of . . . .

Advanced Accounting

By ROY B. KESTER

Professor and Head of Department of Accounting, Columbia University.
A Volume of the University Accounting Series.

Like "Principles of Accounting" by the same author, this volume has been used for years by colleges and universities all over the country, providing the means through which thousands of students have secured their accounting education. It is constantly referred to as standard by accountants, business men, bankers, lawyers, and the courts.

THIS Fourth Edition of ADVANCED ACCOUNTING represents the *newest* text material available. It is a complete revision, written to express the author's unmatched understanding of the needs of professional training today in the advanced field.

As compared with previous editions, which have always recognized and treated the fundamental considerations in connection with financial and operating statements, this 4th Edition is organized with a clearer definition and more vigorous treatment of these basic considerations and an extension of their application to the accounting records themselves.

The three basic deliberations in the preparation of reports as here presented are: (1) the pertinent items to be admitted to them; (2) the basis on which they shall be admitted—i.e., their proper measurement; and (3) the manner of their presentation. The material is developed around this theme applied to each of the items of the corporate balance sheet and including some of their applications to consolidated balance sheets. An ample problem appendix is provided, correlated with each chapter of the text. 850 pages.

Contents

Accounting Principles—Item Content of Balance Sheet. Measurement in Accounting. Presentation of Data on the Balance Sheet. The Statement of Income Operations. Cash and Marketable Securities. The Receivables. Inventories and Prepaid Expenses. Sinking and Other Funds, Long-Term Investments. Fixed Assets and Income Operations; Depreciation—Its Content. The Measurement of Depreciation. The Record of Depreciation and Its Interpretation. Equipment Assets. Buildings, Land, and Wasting Assets. Intangible and Other Assets. Liabilities—Current Liabilities. Long-Term, Other, and Contingent Liabilities. Capital Stock as Contributed Capital. Accounting for Capital Stock—Its Presentation on the Balance Sheet. Capital Surplus as Contributed Capital. Revenue the Source of Profits. The Measurement of Profits—Expenses. Dividends, the Distribution of Profits. The Report on Profits, Earned Surplus and Reserves. Combinations and Consolidations. The Consolidated Balance Sheet—On Date of Acquisition. Consolidated Goodwill—After Operation. Intercompany Eliminations in Consolidations. Consolidated Working Papers and Statements. Reading the Balance Sheet. Problems.

Price $5.00

THE RONALD PRESS COMPANY
15 East 26th Street, New York 10, New York

Third Edition of . . . .

Cost Accounting
Principles and Practice

By **JAMES L. DOHR,** *Professor of Accounting, Columbia University; and* **HOWELL A. INGHRAM,** *Assistant Professor of Accounting, Columbia University.* ***A volume of the University Accounting Series.***

THIS new edition of a widely used, successful text emphasizes the utilization of cost data in the administration of the enterprise and in the administration of the economy. Every effort has been made to reflect the modern developments in the use of cost information and to deal with present day problems. The first part adheres to the presentation of cost fundamentals with relatively simple cost procedures illustrating job order, process, and standard cost compilation. Full consideration is then given to the more intricate cost problems, with emphasis on their economic aspects. Along with the revision of the text, the problems have been comprehensively revised in the light of present day cost practices.

In this revision, special effort has been made to arrange the material in the sequence most effective for use; to select precise and generally accepted terminology; to give a generous number of forms and figures in illustration of principles and techniques; and to present illustrative problems and solutions in the body of the text. 750 pages.

Contents

Part I. Basic Cost Accounting: Nature, Scope and Purpose of Cost Accounting. Cost Accounting and Management—Basic Financial Statements. Preparation of Financial Statements—Basic Ledger Accounts. Development of Cost Statements. Control and Subsidiary Accounts—Process Accounts Illustrated; Job Order Accounts Illustrated; Standard Costs. Classification and Analysis of Expenditures. Subsidiary Ledger Accounts—Material and Labor; Factory Service. Unit Costs and Their Uses. Subsidiary Ledger Accounts—Goods in Process. Allocation of Factory Service to the Product. Subsidiary Ledger Accounts—Finished Goods. Journals in Cost Accounting. Original Evidences of Transactions—Procurement; Material Stowage and Issue; Labor; Production, Shipment, Distribution, and Other. Separate Factory Accounts. *Part II. Special Cost Problems:* Acquisition of Service Capacity. Utilization of Factory Service. Manufacturing Risks. By-Products and Joint Products. *Part III. Administrative Control:* Administrative Control—Standard Costs; Budgetary Accounting. Standard Costs and Budget. *Part IV. Cost Systems:* Design and Installation. Informal Cost Accounting—Physical Inventory Method. Product Classification System. Estimating Cost System. Complete Cost System. Industry Cost Accounting. Glossary. Problems.

Blank Books for use with practice problems available.

Price $5.00

THE RONALD PRESS COMPANY
15 East 26th Street, New York 10, New York

Fourth Edition of . . . .

Auditing Practice Set

By **PAUL E. BACAS,** *Instructor in Accounting, New York University, and* **WILLIAM WIDER,** *Associate Professor of Accounting, New York University*

AN ENTIRELY new set of accounts, records and business papers giving materials for audit of a manufacturing corporation. It offers a unique combination of text and drill work which can be used effectively with any auditing textbook, in either one or two semester courses.

The purpose of this book is to train the student in the mechanics of an audit. It is arranged so that the work generally entrusted to a junior accountant is outlined in the early lessons, followed by that usually entrusted to the senior accountant. The student follows through the actual work performed in a balance audit of a small concern. He prepares working papers or notes from books of account and completes the audit through the translation of the notes and the information received into adjustments or into suggestions, etc., to the management through the report. Sufficient verification of details is given in connection with cash, revenues, and expenses to illustrate the nature of the work in a detailed audit. 84 sheets, 8½ x 11. Loose-leaf.

Contents

Nature of Engagement
Trial Balance
Petty Cash
Bank Reconcilations
Bank Statement
Checks Returned with Bank Statement
Copies of Deposit Slips Obtained Direct from Bank
Report of Amounts Collected for Cash Sales
Record of Cash Sales
Trial Balance of Accounts Receivable
Notes Receivable
Stock Certificate
Financial Statement
Branch Account
Inventories
Price List
Receiving Book
Prepaid Insurance Premiums
Insurance Register
Statement Relative to Life Insurance Policy
Accounts Payable
Mortgage Payable
Stub of Stock Certificate Book
Correspondence Items
Extract from the Minutes Made During Previous Examination
Minutes
Trial Balance—Before Closing
Petty Cash Disbursements
Executive Payroll
Changes in Payroll
Cash Receipts; Cash Disbursements
Voucher Register
Invoices
Factory Payroll; Office Payroll
General Ledger
Journal Entries
Accounts Receivable
Capital Stock Ledger

Price $2.50

THE RONALD PRESS COMPANY
15 East 26th Street, New York 10, New York

ADVANCED ACCOUNTING

By Noble, Karrenbrock, and Simons

Covers two full semesters of work

Now Available

ADVANCED ACCOUNTING is designed to follow any standard first-year accounting textbook. The course has been so planned that in the opening chapters the presentation of a rapid review of the accounting process establishes a correlation between the two-year study of accounting. Ample material is provided for both intermediate and advanced accounting.

Each chapter in this course provides a step-by-step presentation of the fundamental logic underlying the accounting procedure. This presentation is accompanied by illustrative materials intended to help the student visualize each step in the accounting process. Numerous illustrations in the book enable the student to visualize the practical problems which accompany each chapter. Each chapter is followed by questions for class discussion and numerous timely and well-constructed laboratory problems.

CONTENTS

The Accounting Process
The Accounting Process Illustration
Statement; from Incomplete Data
Cash and Receivables
Inventories
Investments
Fixed Assets
Intangible Assets and Deferred Charges
Liabilities
Capital Stock
Surplus
Installment Sales
Cost Accounting
Errors and Their Correction
Statement of Application of Funds
The Analysis of Financial Statements
Partnership Formation and Operation
Partnership Dissolution and Liquidation
Joint Ventures
Consignments
Agency and Branch Accounts
Corporate Combination—The Consolidated Balance Sheet
Consolidated Balance Sheet—Preparation Subsequent to Acquisition
Consolidated Balance Sheet—Special Problems in Statement Construction
Consolidated Balance Sheet—Special Problems in Stock Ownership
Consolidated Statement of Profit and Loss
The Statement of Affairs
Receivership Accounts and Statements
Accounting for Estates and Trusts
Actuarial Science—Amounts
Actuarial Science—Present Values
Actuarial Science Applied

SOUTH-WESTERN PUBLISHING CO.

Specialists in Business and Economic Education

CINCINNATI · NEW YORK · CHICAGO · SAN FRANCISCO · DALLAS

TWO BOOKLETS

of timely interest to Accountants

IN anticipation of the next C. P. A. Examinations, we offer the two booklets illustrated—for their practical and informative value, both to examination candidates and to practitioners desiring to review the subject on their own account.

"C. P. A. Examinations and How to Prepare for Them" is a handy 80-page summary prepared by the LaSalle Higher Accountancy Staff, which covers, in five parts, "Accounting Degrees and the Profession"—"How to Prepare in Special Subjects"—"Important General Suggestions"—"How to Take the Examination"—and "C. P. A. Laws and Regulations." These headings clearly indicate its scope and usefulness.

"Requirements for the C. P. A. Examinations and the Practice of Public Accounting" is a compact 32-page companion booklet, pocket-size, recommended for its thorough summarizing of qualification requirements in any part of the United States and Canada. It also outlines in brief the LaSalle Training for C. P. A. and other examinations, as well as LaSalle's Higher Accountancy training proper.

Consistently increasing enrollment, both for the regular training and for C. P. A. Coaching, indicates the reputation for capable and up-to-the-minute instruction which we believe LaSalle has deservedly earned—both within the profession and outside. We invite correspondence on any phase of the subject in which the reader may be interested.

G. I. APPROVED

Meantime, you may find these two booklets helpful, either immediately or as file reference material. The coupon is for your convenience, and involves no obligation

Fill in and send the coupon NOW

▼

LA SALLE EXTENSION UNIVERSITY—Dept. H-355

***A Correspondence Institution*—417 S. Dearborn, Chicago 5, Ill.**

Please send me, without obligation, the literature I have checked in the spaces indicated below

☐ **Check here for C. P. A. Examination booklets.**
☐ **Also send literature on your Higher Accountancy training.**

Name .....

Address .....

For Your Second Semester Classes

COST ACCOUNTING (revised edition)

By JOHN J. W. NEUNER, Ph.D., C.P.A., College of the City of New York

This text, of unquestioned leadership in its field, presents a complete and practical study of cost accounting principles and their application to specific problems. Three practice sets and a series of objective tests are available to supplement the text. A solutions manual is available to instructors. 819 pages $5.00

AUDITING: Principles and Procedures (revised edition)

By ARTHUR W. HOLMES, University of Cincinnati

This outstanding text presents a complete coverage of the principles and procedures of modern auditing practice. In addition to the textual treatment of all phases of a balance sheet audit, there is a coordinated series of Illustrative Audit Papers. A practice problem is included in the text and a complete solutions manual is available to instructors. 651 pages plus 127 audit papers. $6.00

AUDIT PRACTICE CASE (revised edition)

By ARTHUR W. HOLMES, University of Cincinnati
and FRANCIS E. MOORE, C.P.A., Boston University

Completely revised and reworked, this new edition gives the student an opportunity to study auditing procedure under conditions simulating those found in actual practice. The student is required to conduct a complete balance sheet audit, prepare audit working papers and write the audit report. A solutions manual is available to instructors. $5.00

FINANCIAL STATEMENTS

By RALPH D. KENNEDY, Ph.D., The George Washington University

This new text presents a complete and practical treatment of financial statement preparation and analysis. Part I discusses the construction, analysis and interpretation of financial statements. Part II presents an explanation of the items appearing on the statements of selected specialized industries. A solutions manual is available to instructors. 559 pages $4.50

BUSINESS LAW: Principles and Cases (third edition)

By HAROLD F. LUSK, S.J.D., Indiana University

Completely revised in 1946, this new edition contains a well-balanced arrangement of text and case material covering all major phases of business law. Text material is organized for a teachable development and integration of topics. Cases have been carefully edited to eliminate all extraneous matter. Objective tests and a complete solutions manual are available to instructors. 992 pages $5.00

RICHARD D. IRWIN, INC.

332 South Michigan Ave. Chicago 4, Illinois

Just Published

ACCOUNTING PRINCIPLES AND PRACTICE

By GEORGE C. BROOK, C.P.A.

HEAD OF THE DEPARTMENT OF BUSINESS
WRIGHT JUNIOR COLLEGE
CHICAGO

This new text has been developed to meet the needs of students who begin their study of accounting in the first year of college.

It is based upon the requirements of a full year course and contains a logical, practical and extremely teachable presentation of modern accounting principles and practice.

Text material is presented in logical units of instruction based upon a functional classification of subject matter. The first half of the book treats primarily the accounting procedures of small service and mercantile concerns operated as single proprietorships or partnerships. The last half of the text deals with accounting for large corporations engaged in manufacturing operations.

Many TEACHING AIDS involving sound teaching methods, are available to assist the instructor in his presentation:

★ THREE SHORT PRACTICE SETS

★ CLASS EXERCISES

★ PRACTICAL PROBLEMS

★ OBJECTIVE TESTS

★ COMPLETE SOLUTIONS MANUAL

Text	$4.25
Practice Sets 1 and 2	$1.25
Practice Set 3	$1.00

WRITE FOR EXAMINATION COPY

RICHARD D. IRWIN, INC.

332 South Michigan Ave. Chicago 4, Illinois

Announcing

MONOGRAPH NO. 4

The Entity Theory of Consolidated Statements

By

MAURICE MOONITZ

Department of Economics, Stanford University

From the foreword prepared by the Committee on Monographs:

In a "Statement of Objectives" published in the March, 1936, issue of the ACCOUNTING REVIEW the Executive Committee of the AMERICAN ACCOUNTING ASSOCIATION listed consolidated statements as one of six main subjects in the field of accounting principles calling for immediate study and research. Later, at the request of the Executive Committee, E. L. Kohler made a survey of this subject and prepared a brief report, "Some Tentative Propositions Underlying Consolidated Reports," which was published in the March, 1938, issue of the REVIEW. In 1939 the ASSOCIATION issued a monograph, "Financial Statements" by M. B. Daniels, of which Chapter V consists of a brief discussion of the nature and significance of consolidated statements and the principal problems arising in their preparation and presentation. Issue of the present monograph, a more complete treatment of the theory of consolidated statements, reflects the continuing interest of the ASSOCIATION in this important phase of accounting.

Dr. Moonitz, like Kohler and Daniels, views consolidated statements as "secondary rather than primary in character," as "supplemental to, rather than as substitutes for" the statements of the constituent corporations. There are, of course, some areas of disagreement and difference in emphasis. The main contribution of the present monograph lies along the line of elaboration of an underlying, consistent theory with respect to consolidated statements. As the author states in his concluding sentence: "The useful application of this or any other theory is still dependent upon the ingenuity and good judgment of those who deal with the baffling cross-currents of concrete situations."

Approximately 120 pages—Heavy Paper Binding—$1.00 a copy.

orders should be addressed to:

American Accounting Association

School of Commerce

Northwestern University

Evanston, Illinois